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# MANUAL

FOR

NON-COMMISSIONED OFFICERS AND PRIVATES

OF

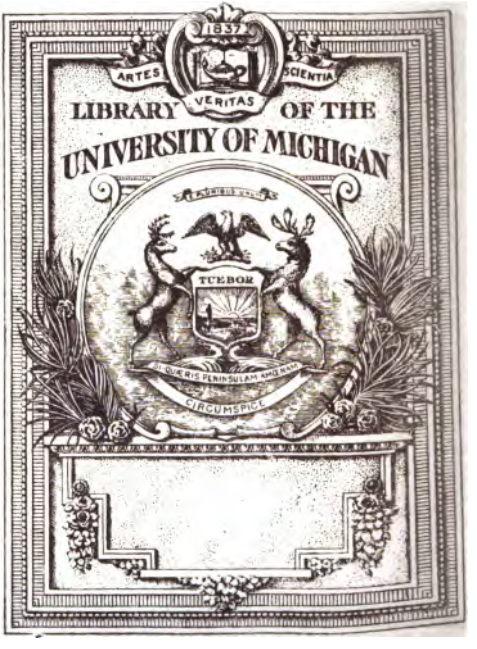
# FIELD ARTILLERY

OF

THE ARMY OF THE UNITED STATES

1917

VOLUME II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WASHINGTON, *June 16, 1917.*

Noncommissioned Officers and
the Army of the United States
ublished for the information and

OF WAR:

TASKER H. BLISS,
*General, Acting Chief of Staff.*

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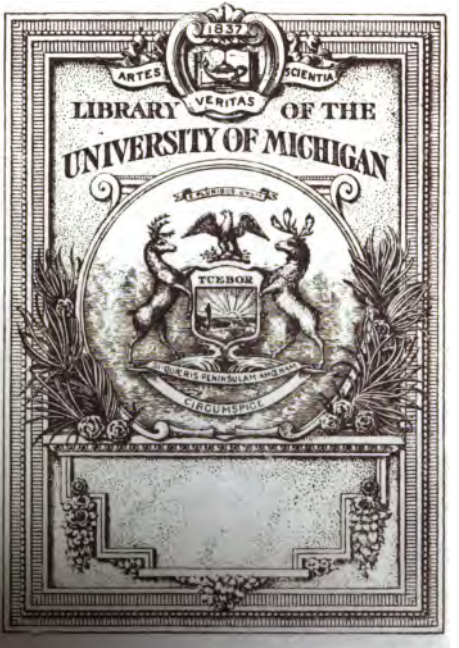
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WAR DEPARTMENT

# MANUAL

FOR

## Noncommissioned Officers and Privates

OF

# FIELD ARTILLERY

OF

## THE ARMY OF THE UNITED STATES

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# 1917

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## VOLUME II

WASHINGTON
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1917

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WASHINGTON, *June 16, 1917.*

The following Manual for Noncommissioned Officers and Privates of Field Artillery of the Army of the United States is approved and herewith published for the information and government of all concerned.

[2582824 A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

TASKER H. BLISS,
*Major General, Acting Chief of Staff.*

OFFICIAL:

H. P. McCAIN,
*The Adjutant General.*



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# MANUAL

FOR

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OF

# FIELD ARTILLERY,

OF THE

# ARMY OF THE UNITED STATES.

## VOL. II.

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## CHAPTER I.

## ARTILLERY IN THE FIELD.

---

[Extracts from Drill and Service Regulations.]

### Section 1. Employment of Field Artillery.

#### CHARACTERISTICS OF THE ARM.

**1464.** The characteristics of Field Artillery are:

1. Great power concentrated in a relatively small tactical unit.
2. Rapidity of fire.
3. Long range.
4. Ability to act from concealed positions.

The first characteristic facilitates intelligent direction. It enables a commander to hold a powerful force well in hand and to bring it to bear with the desired intensity at the proper place and time.

The second characteristic enables Artillery to bring a crushing fire to bear upon a vulnerable enemy before he can escape from its action.

The third characteristic permits Artillery great freedom of action, enabling it to interpose effectively over a broad terrain and to secure the concentration of effort of widely dispersed units.

The fourth characteristic facilitates establishing the guns in favorable positions, acting by surprise, preserving freedom of maneuver, and makes it possible for inferior artillery to remain on the battle field.

Field Artillery, on the other hand, has certain limitations which prevent its employment as an independent, self-sustaining arm. Among these may be mentioned:

(*a*) It is unable to act otherwise than by fire.

(*b*) It is extremely vulnerable when exposed in the open to percussion fire at medium ranges; also if exposed to shrapnel fire when in route formation or when in the act of occupying a position, as it can protect itself only with difficulty by fire action, concealment, or escape.

(*c*) Even when unlimbered it defends itself with difficulty against attacks on its flanks or rear.

The tactics of Field Artillery are based upon its characteristic properties and limitations and upon its employment as an auxiliary to the other arms in battle.

### PRINCIPLES.

**1465.** The exact method of employing Field Artillery depends, as for the other arms, upon the particular tactical situation and upon the plan decided upon by the commander of the troops. The commander of the troops, the artillery commander, and regimental and battalion commanders must clearly indicate to their respective subordinates the objects to be accomplished. Technical details should, as far as possible, be left to subordinates, so that superior commanders may be free to follow the developments of the action and to apply the means at their disposal most advantageously in meeting the various conditions. The ends to be attained and the methods of attaining those ends vary with the nature of the action, as well as with each particular phase thereof.

The principles set forth in these regulations are the general guides of action. By study and reflection these principles are

assimilated; by practice in applying them to real or assumed conditions the habit of prompt and correct action is acquired. To the professional readiness thus obtained must be added loyalty in carrying out the plans of a superior, skill in recognizing and seizing opportunities, and determination to win at any cost.

**1466. Cooperation.**—Artillery has in general no independent rôle on the batlle field. Its sole object is to assist the other arms.

To secure decisive results, troops must advance, occupy the hostile position, and by vigorous pursuit destroy or throw into confusion the hostile forces. The isolated and independent action of Artillery leads to no decisive results. Close cooperation between the Artillery and the troops which it supports is, then, necessary for effective action. To insure this there must not only be a mutual understanding of each other's methods of action, powers, and limitations, and sure and rapid means of communication between the various elements concerned, but there should be a preliminary conference between the Infantry and Artillery commanders concerned as to the definite plans of each, their expected development, and the actual means of communication to be employed.

Infantry which is engaged must be accompanied by Artillery officers and scouts, who will communicate to the Artillery commander changes in the situation and the needs of the Infantry. Artillery assists the forward movement of the other arms by keeping down the hostile fire directed upon its own troops. This end is best accomplished through the infliction of physical losses upon the important parts of the hostile forces.

In the case of two opposing forces neither of which is able for the time being definitely to assume the offensive, the powerful and continued action of the Artillery may be necessary to determine upon and to prepare the way for the forward movement of the troops.

**1468. Utilization of forces.**—The number of batteries actually brought into action must be sufficient to dominate the situation from the outset and to assure the prompt and effective accomplishment of the specific task assigned to the Artillery. To secure decisive results, superiority of fire is, in general, necessary; but it is important, especially during the earlier stages

of an engagement, that the number or the positions of the guns should not be prematurely betrayed nor ammunition be uselessly expended by the employment of a greater number of guns than the actual situation requires. Moreover, it is essential that the superior commander should always have at his disposal batteries that can be utilized to meet the recurring emergencies of battle.

It is, therefore, a principle that all guns should be placed in position at an early stage of the action, but only so many of them should be employed at any one time as are actually necessary. It is not, as a rule, desirable to detail Field Artillery to form part of a general reserve. **The true reserve of Field Artillery is its ammunition train.**

**1469. Preparatory dispositions.**—Premature commitment of Artillery to action is to be avoided. On the other hand, Artillery must be available and ready for every duty as it arises.

Readiness for action is secured and freedom of maneuver retained by posting Artillery in or near suitable concealed positions, and making all preparations for meeting the probable phases of the action.

To facilitate the work of preparation, the duties assigned to Artillery in observation or readiness are made as definite as the conditions will permit. Thus, the terrain in which the enemy is expected to appear may be divided up into sectors and each sector may be assigned to a given unit. Moreover, both in the preparatory and the later phases of an action special duties may be assigned to particular batteries.

For example:

1. To fire upon the hostile Artillery. Such batteries are called **counter batteries.** This designation may be made previously to opening the engagement, in order that the hostile Artillery may be discovered and fired on before it can seriously enter the engagement, or it may be made after a portion of the hostile Artillery has become effective and it is necessary to overpower it and keep it under subjection. The term, then, is distinctive of those batteries whose special function it is to combat the enemy's Artillery.

2. To prepare and support the Infantry attack. These batteries are called **Infantry batteries** and include those assigned

to the direct support of our Infantry, assisting it by firing on the hostile Infantry, by opening breaches in the enemy's lines or by otherwise facilitating the advance. The Infantry batteries are under the protection of the counter batteries, and include the so-called **batteries of preparation**, which fire on the opposing Infantry, and the **breaching batteries**, whose mission is to open by their fire passages in the enemy's line through which our troops may advance.

3. To be prepared to meet a counter attack. Such batteries are called **batteries of the counter attack.** Batteries of the counter attack are posted in observation, or readiness, carefully watch the terrain, and assist in defeating any counter attack the enemy may make.

4. To advance to the close support of the Infantry attack. These batteries are called **accompanying batteries.** The term accompanying batteries must not be too narrowly interpreted as meaning an actual presence of the accompanying batteries on the Infantry firing line, for in reality these batteries accompany with fire rather than by actual movements of the guns. Batteries may, however, be actually moved forward when by such forward movement a distinct and positive advantage will be obtained or the morale of the Infantry be materially increased.

5. To come to the assistance of other batteries. Batteries designated for this duty are called **reenforcing batteries**; such batteries may have been previously held in observation or readiness, may have just arrived on the field or been called in from an adjacent sector.

6. To draw the fire of the enemy's Artillery which has not disclosed itself. Such a battery is called a **decoy battery.** It is usually placed in an advanced position with wide intervals, and acts with great rapidity of fire so as to lead the enemy to believe he is opposed by a much larger force, thus inducing him to disclose his position.

The above examples must not be construed as authorizing a rigid, unchanging division of duties. Individual batteries may be called upon to perform, during the course of an engagement, all of the functions indicated.

LEADERSHIP.

1483. The art of leadership of Field Artillery troops consists in the application of sound tactical and technical principles to concrete cases in service.

1491. Commanders must show themselves to be true leaders. They must act in accordance with the spirit of their orders. Self-interest must be eliminated from their calculations.

1492. The best results are obtained when leaders know the capacity and traits of those whom they command; hence tasks should be assigned with due regard to the capacity of individuals, and in making detachments units should not be broken up nor a disposition ordered that will cause an intermingling of units.

1493. The authority of commanders should be exercised with firmness, kindness, and justice. Discipline should be strict but not tyrannical. Punishments must conform to law and follow offenses as promptly as the circumstances will permit. Tyrannical or capricious conduct and the use of abusive language is not only forbidden but weakens the authority of a commander. Courtesy to subordinates is as indispensable as courtesy to superiors.

1494. Commanders should exhaust every effort to keep their commands properly equipped. In order to lighten the severe physical strain inseparable from service in campaign, efforts must be made to spare the troops and animals unnecessary hardship and fatigue; but when necessity arises the limit of endurance must be exacted.

1495. The latitude allowed to subordinate commanders is in direct proportion to the size of their commands. Each leader should see to the execution of his task, leaving to the proper subordinates the execution of details and interfering only when mistakes are made that threaten seriously to prejudice the general plan. Where the troops of different units come in contact with each other, the leader must indicate a dividing line or one task must be subordinated to another by a definite order.

1496. This method of leadership requires that subordinates be not only acquainted with the decision and plan of the

commander and the particular task assigned, but, in order to induce self-reliant action on his part, the subordinate must from the beginning be kept informed as to so much of the situation as may have a bearing upon his actions.

Statements intended to justify a course of action are evidence of weakness and mental indecision. Garrulousness, verbosity, argument, and discussion with subordinates weaken authority and should be avoided.

**1497.** True leadership will not knowingly employ ambiguous terms in the expression of orders or wishes. The desirable must be clearly expressed and whether or not it is to be attained by all means. A firm resolution must be always apparent in written or verbal orders and in the demeanor of the leader.

**1498.** Command in war demands the utmost tact, wise self-restraint, and vigorous clearness. The problem of command is not only to move troops and place them for action; its task is the wider one of causing self-reliant action on the part of all the subordinate leaders, of directing the spiritual forces of the command in the right direction and of concentrating the combined physical, mental, and moral energies of the command upon the attainment of the end indicated by the superior commander, which must be clearly and unmistakably communicated to all concerned.

### TEAMWORK.

**1499.** The greater part of any Field Artillery command goes into action and remains under the immediate control of responsible officers. However, in reconnaissance work, in the ammunition-supply service, and even in the batteries when communications fail or emergencies suddenly occur subordinates will be thrown upon their own responsibilities.

Subordinates must therefore be given great latitude in the execution of their tasks. The success of the whole depends largely upon how well each subordinate coordinates his work with the general plan.

**1500.** In a given situation it is far better to do any intelligent thing consistent with the forceful execution of the general plan than to search hesitatingly for the ideal. This is the true rule of conduct for subordinates who are required to act upon their own initiative.

A subordinate who is reasonably sure that his intended action is such as would be ordered by the commander, were the latter present and in possession of the facts, has enough encouragement to go ahead confidently. He must possess the loyalty to carry out the plans of his superior and the keenness to recognize and to seize opportunities to further the general plan.

**1501.** Initiative must not become license. Regardless of the number of subordinates who are apparently supreme in their own restricted spheres, there is but one battle and but one supreme will to which all must conform.

Every subordinate must therefore work for the general result. He does all in his power to insure cooperation between the subdivisions under his command. He transmits important information to adjoining units or to superiors, and, with the assistance of information received, keeps himself and his subordinates duly posted as to the situation.

**1502.** When circumstances render it impracticable to consult the authority issuing an order, officers should not hesitate to vary from such order when it is clearly based upon an incorrect view of the situation, is impossible of execution, or has been rendered impracticable on account of changes which have occurred since its promulgation. In the application of this rule the responsibility for mistakes rests upon the subordinate, but unwillingness to assume responsibility on proper occasions is indicative of weakness.

Superiors should be careful not to censure an apparent disobedience where the act was done in the proper spirit and to advance the general plan.

**1503.** All officers and noncommissioned officers seize every opportunity to exercise the functions consistent with their grade, and all assist in the maintenance of order and control.

Every lull in the action should be utilized for as complete restoration of order as the conditions permit, for the resupply of ammunition, for overhauling communications, and for providing concealment and cover.

**1504.** Any officer or noncommissioned officer who becomes separated from his proper unit and can not rejoin must at once place himself and his command at the disposal of the nearest higher commander.

Anyone having completed an assigned task must seek to rejoin his proper command. Failing in this, he should join the nearest Artillery engaged with the enemy.

Soldiers are taught the necessity of remaining with their batteries, but those who become detached must join the nearest command and serve with it until the battle is over or reorganization is ordered.

## Section 2. Information Service.

### DUTIES AND PERSONNEL.

**1517.** The functions of this service are: (1) To secure information which will favor the movement and employment of the guns; (2) to maintain communication between the various commanders concerned; (3) to provide for the security of the Field Artillery when such security is not provided by the other arms.

Information is usually secured by reconnaissance officers and scouts. Communication is usually maintained by agents acting as couriers or by signalers, using visual signals, the telephone, or the buzzer. The duties of the two classes are apt to merge into each other and no sharp line of distinction can be drawn between the duties to be performed by the different individuals.

**1518.** The probable movement of guns and probable occasions for their employment should, so far as possible, be foreseen and special information secured beforehand to facilitate such movement or employment. Thus, on first approaching the scene of expected action, reconnaissance officers and scouts should be pushed well ahead to examine the terrain and to gain early touch with the tactical situation. They should thus be prepared to furnish the Field Artillery commander with information which will assist him in making recommendations as to the posting of the Artillery. After the positions are selected the reconnaissance officers and scouts should secure further detailed information, such as firing data, appropriate routes for approaching and occupying the selected positions, etc., and should be prepared to guide battalions and batteries to their appointed positions. During the progress of the action this personnel is em-

ployed to prepare for further movements; to examine positions likely, under certain contingencies, to be occupied; to act as auxiliary observers, reporting on movements of the enemy or of our own troops, and on changes necessary in the adjustment of fire; to maintain communication between the Field Artillery and Infantry commanders, etc.

DUTIES OF SCOUTS.

**1525.** To secure information which will facilitate the movement and the employment of Artillery is the special function of Artillery scouts.

The movement of Artillery is facilitated, for example, by determining the practibility of a given route; by exploring a section of country and selecting the best routes for traversing it; by locating any bodies of the enemy which might obstruct the movement, etc.

The employment of Artillery is facilitated, for example, by determining the dispositions of the enemy, the dispositions of our own troops, and such changes in these dispositions as may occur from time to time during the progress of an action; by observing the effect of our fire and indicating, if necessary, corrections which will insure its proper adjustment; by reporting the arrival of hostile parties within dangerous proximity of the Artillery position, etc.

The special functions of scouts are, then, to reconnoiter, to observe, to report.

**1526.** On minor duties scouts may operate singly. Ordinarily, however they operate in pairs and accompany a reconnaissance officer. When operating in pairs without a reconnaissance officer, one of the scouts devotes his special attention to gaining the desired information, the other looks out for safety, keeps track of the route followed, and watches for signals from the unit to which the scouts belong or from neighboring scouts, etc.

In specially important cases a patrol consisting of a number of scouts under a reconnaissance officer may be employed.

Scouts operate according to the rules laid down for patrols in Field Service Regulations, so far as these rules are appli-

cable to their more restricted functions. When sent on a duty they are to be given explicit instructions as to the information required, as to the place for reporting, and as to the time available for securing the desired information. Full latitude is to be allowed them in the choice of ways and means to carry out the duties imposed.

**1527.** The nature of some of the duties to be performed by scouts is indicated below:

1. In reconnoitering a designated road the scout prepares himself to report especially upon: Its general practicability for Artillery; pioneer work needed, if any; condition of the road as affecting rate of march; strength of bridges; the existence of defiles on the road, such as causeways, bridges, narrow valleys, etc.; practicability in general of leaving the road and moving across adjacent country; existence of intersecting roads, with direction and destination.

2. In selecting a route to a given point the scout endeavors first to get a good view of the terrain. If no road exists in the desired direction, he studies the lay of the ground and judges where the most practicable route will be. If possible, he selects certain landmarks on the proposed route, from which good views can apparently be obtained, and proceeds rapidly from one to another, studying the country as he moves. Having determined a practicable line of advance to the given point, he may make more detailed investigations as he returns.

When the advance to an Artillery position is in question, it is especially desirable that scouts should examine all the ground in the neighborhood of the position, so as to be able to lead officers or batteries quickly to any part of it.

3. In reconnoitering a route, scouts must be especially careful to note landmarks, to turn frequently and look at the country which they have passed, and to take such other measures as will enable them surely to retrace their steps either by day or night. Practice in moving at night is particularly important for scouts.

4. When sent to examine a place in which an enemy may be concealed—for example, a wood, a defile, a village—scouts first examine its approaches, its edges, and, if possible, its exits; they endeavor to reach a position from which they

can overlook it; ordinarily, one scout or one party should observe while another passes through the suspected place.

If preceding the column by only a short distance, scouts must act with great promptness.

5. When the information at hand as to the location and disposition of the enemy is insufficient, scouts may be pushed forward to secure this information, both by personal reconnaissance and by communicating with our own advanced troops. In such cases they should fix in their minds the lay of the ground near the enemy's positions, noting such landmarks and making such sketches as will enable them to give a clear description of his situation. Similar information should at the same time be secured with regard to our own troops.

6. During an action, when observation of fire or of the terrain is difficult, parties of scouts may be sent to occupy positions from which they can keep their commander continually informed as to the efficacy of the fire and as to changing conditions in the field of action. Thus they should be able to verify the presence of the enemy in a certain locality and report his situation and dispositions with reference to certain landmarks; to report the arrival of bodies of the enemy in a given position or their departure therefrom; to report the positions occupied by our own troops, the possibility of firing over them with safety, and special ways in which the guns may be of assistance to them; to report whether or not our fire is properly adjusted, indicating such corrections as may be necessary.

7. As a general principle, Field Artillery in position is safeguarded by troops of the other arms; but when posted in exposed positions as, for example, on the flank of a line, it is incumbent upon the Artillery commander, as an additional precaution, to post scouts where they may, by suitable signals, give timely warning of the approach of hostile parties.

8. The information secured by a single scout is ordinarily communicated by a verbal report. In the case of a patrol, however, it is often advisable for the patrol commander to send concise written reports, giving important information as it is secured. These reports should be supplemented by a sketch on which is indicated the important information secured. A

route sketch should be on a scale of 3 inches to the mile. A panoramic sketch of the enemy's position should show angular distances in miles between important points. The point from which the sketch was made should be clearly stated and should, if practicable, be indicated on the route sketch.

Scouts acting as auxiliary observers during an action report, if possible, by wire; otherwise, by signals with flag, heliograph, or lantern.

In communicating with each other for the purpose of indicating a change in the direction of march, scouts employ the signals prescribed in these regulations.

The whistle or the arm signal is used for attracting attention.

To indicate danger, enemy in sight, both arms are raised vertically. The arms are raised and lowered energetically several times if the danger is imminent.

### TRAINING OF SCOUTS.

**1529.** For scout duty, alert, cool-headed, and intelligent men should be selected; they should be good horsemen and have good eyesight and good hearing.

Each scout should be provided with a good field glass, a compass, a watch, a whistle, a pocket message and sketch book, a pencil, and a combination flag kit.

**1530.** The training of a scout should have for its object:

1. To develop his powers of observation.
2. To teach him what to look for and how to recognize it.
3. To teach him how to report intelligently and concisely.

The scout's powers of observation and description are developed first of all by simple exercises. Thus he may be required to look at a given section of terrain and describe what he sees in it.

The scout is made to appreciate the lay of the land as indicated primarily by its drainage, and secondarily by other natural features, and by the works of man. A good eye for country is thus to be acquired; the scout learns to appreciate the configuration of a terrain which may be only partially visible to him, and thus to deduce the most favorable routes for traversing it and the most probable positions for hostile occupation.

The scout must also be taught to distinguish troops of the different arms, to recognize their formations and to familiarize himself with their usual methods of action.

The scout must be trained (*a*) to use field glasses; (*b*) to read maps; (*c*) to make reports, both verbal and written; (*d*) to make route sketches; (*e*) to make panoramic and position sketches; (*f*) to signal; (*g*) to operate telephones.

### AGENTS.

**1531.** Agents are employed to act as mediums of written or oral communication between the commander and the elements concerned. They keep the commander informed as to the location of the several elements and the best route for approaching them, guide the elements into new positions when necessary, and transmit information between the commander and troops of the other arms.

Each battalion and higher headquarters is provided with sufficient agents for linking the commander with the next higher units of his command. For cases which may require a greater number of individuals than are thus provided, the subordinate commanders detail the necessary additional men. For example, commanders of combat trains detail men to act as agents in keeping the appropriate higher commanders informed as to the position of the combat train and for maintaining communication between the higher commander and the combat train. Likewise, when the commander of the Field Artillery of a division or of a smaller force acting independently is not with the commander of the troops, the former leaves his adjutant or an appropriate individual to represent him at the headquarters of the command. An important function of the agent so left with the commander of the troops is to obtain and to keep the Field Artillery commander advised of all information which may assist or otherwise affect the Field Artillery.

**1532.** Agents are especially trained and exercised in carrying verbal messages; in map reading, so that they may be able to identify positions or roads pointed out to them on the map; in simple sketching, so that they may be able to indicate relative positions of troops, features of the terrain, etc.; in find-

ing their way, both by day and night, to designated distant positions; in signaling; in the use of the service buzzer.

Certain details in connection with the performance of courier duty by agents are noted below:

(*a*) A courier makes every effort to keep himself informed as to the location of the subdivision to which he pertains and as to the route by which it may be most readily reached.

(*b*) When sent on a mission he notes carefully the country traversed, the facilities and difficulties which it offers for the passage of Field Artillery, and endeavors to impress upon his mind the features of the terrain so that he would be able to guide troops through it if called upon to do so.

In pursuing a given route for the first time, it is advisable to turn frequently and observe how objects appear after they have been passed; retracing the same route is thus much facilitated.

(*c*) He moves promptly when on an errand, and allows nothing to delay or interrupt him. All military persons are required to expedite the movements of such messengers and to point out promptly the best routes for reaching the subdivision or individual sought.

(*d*) On reaching his destination, if the individual sought is not immediately seen or recognized, the courier calls out the name or military designation of the person sought: e. g., "Commanding officer, Battery A, First Field Artillery." It is not necessary for a mounted man carrying a message to dismount when addressing or addressed by a dismounted officer.

(*e*) Having delivered the message he waits in the presence of the individual receiving it until notified whether or not an answer is to be taken. In case of delay he asks for instructions.

Important messages should always be in writing and should be acknowledged by the receiver's initials on the envelope, with date and time of receipt.

Verbal messages should always be repeated by the courier in the presence of the sender before starting on the errand. The message should be couched in concise terms. The sender should make sure that the courier grasps its spirit and meaning.

If a courier is aware of the nature of the message carried and has noted any circumstances bearing upon its subject mat-

ter since leaving the sender, he should, after delivering the message, report the circumstances.

(*f*) If a courier, after diligent search, is unable to find the individual to whom he is sent he endeavors to find some other person who can take full advantage of the information conveyed. Whether or not this can be done, he always reports back to the sender with full facts in the case.

It is the duty of all subordinate Artillery commanders to notify the next higher commander when circumstances require them to make a material change of position without the knowledge of the latter.

(*g*) A courier should note matters of military interest, especially those affecting the subdivision to which he pertains, and should make report of any essential matters on his return to the officer to whom he is assigned.

If he carries an order directing a change of position of a subdivision, it is often advisable to direct him to accompany the subdivision into the new position so as to enable him to become familiar with the ground and to be able to report upon conditions in the new position.

### ROUTE MARKERS.

**1533.** It is incumbent upon an officer preceding his command for reconnoissance or other purposes to mark the route so that uncertainty may not arise on the part of those in rear as to the route to be followed.

The individuals employed on this duty are termed route markers. All enlisted men belonging to headquarters detachments and to battery details are trained in the performance of this duty.

The sergeant major of a battalion or regiment or the first sergeant of a battery is charged with the details of the service, thus leaving the commander to devote himself to the reconnoissance or other work.

Within a column it is the duty of each element to maintain touch with the element next preceding it.

**1534.** A marker is made to understand clearly:

(*a*) The route to be followed.

(*b*) The particular organization to be guided.
(*c*) The message, if any, to be delivered.
(*d*) The route he is to follow in order to rejoin the commanding officer.

The marker indicates the correct route, acting as guide if necessary over terrain where the route is difficult to follow, and as soon as his mission is fulfilled hastens to replace the next marker or to rejoin his detachment or detail. If necessary, mounted men may be temporarily taken from the organizations of the command to increase the number of markers. The number employed, however, should always be the minimum consistent with insuring the uninterrupted march of the command.

By the establishment of well-understood conventions, or by the use of suitable signs, the number of markers may be reduced. Thus, it should be understood that a main traveled road is not, without indication, to be left for one that is noticeably less traveled, and that a straight road is not, without indication, to be left for one which deviates from it. By marking arrows on trees and buildings, or by other suitable signs, uncertainties of a minor nature may be removed. In important cases, however, a marker should always be left at places where a reasonable doubt may arise.

When the head of the column for which the route is being marked comes within view of a marker the latter signals the former, and the former acknowledges with a countersignal. Both signal and countersignal should be distinctive and should have been previously agreed upon. The same signal and countersignal are used throughout the detail.

## Section 3. Choice of Position.

### THE FIRING BATTERIES.

**1546.** The area within which the Field Artillery must take position is determined by the tactical situation and the plan of action decided upon by the commander of the troops. The Field Artillery is not free, therefore, to chose its own position, but must make the best use of the terrain within the limits thus imposed.

**1548. The only invariable rule in the choice of a position is so to post the guns as to be able to carry out effectively the task assigned them.**

Important considerations in the choice of a position are:

1. Obtaining an effective range.
2. Securing a large field of fire.
3. Concealment from view.
4. Facility of movement to the front, flanks, and rear.
5. Proximity of good cover for teams.
6. Favorable conditions for resupply of ammunition.

Positions combining all of the above qualifications are seldom or never found. The choice as to which consideration carries most weight depends upon the tactical situation.

**1549.** By a suitable choice of positions and of observing stations the greater part of the terrain within range of the guns may be included within the field of fire. Concealed positions and indirect laying are habitually used. Certain conditions require positions in the open from which direct laying may be used.

**1551.** When not incompatible with the effectual accomplishment of the duty to be performed, concealment from view is always to be sought. This is true whether direct or indirect laying is employed. By rendering the guns inconspicuous or entirely concealing them their sustained service may be counted upon, while the difficulties of the enemy in locating his targets and adjusting his fire are increased.

**1552.** Skill in the concealment of guns is to be acquired by careful study of ground and by extensive experience on a varied terrain. The following suggestions are to be noted:

Positions which, from the enemy's point of view, are on the sky line are usually the most conspicuous. By placing the guns below the sky line, so that they will have a favorable background and by preventing movements of the personnel, a battery may be unrecognized, even though it is in the open. It is important, however, to have a crest, a hedge, or a clump of trees in front so as to increase the enemy's difficulty of observation and of exact location. In the absence of natural cover artificial means may be used to conceal the guns.

A position in rear of a crest, with a parallel crest of about the same height in front and some distance away, offers many advantages. The enemy is apt to mistake the crest nearest him for the one actually occupied and to consider shots falling between the crests as beyond his target. Trees, a hedge, standing grain, etc., 400 or 500 yards in front of the guns, and so that the line of sight just passes over them, may similarly serve to deceive the enemy as to the actual position.

When indirect laying is to be employed, a position on a gentle slope just far enough behind the crest to insure the concealment of the flashes best facilities running the guns up to the crest should direct laying be called for. If the position is discovered by the enemy, however, and the crest is plainly seen by him, the guns are in a very vulnerable position, as shrapnel may be employed to search such a reverse slope very effectively.

The most advantageous position, from the point of view of concealment alone, is one more than 400 yards in rear of a covering mask, having flash deflade and hidden from the view of any auxiliary observers whom the enemy may push to the front and flanks.

A position on the counter slope is frequently advantageous in reducing dead space, facilitating ammunition supply, and securing suitable observation stations near the guns.

### LIMBERS AND COMBAT TRAINS.

**1555.** The preservation of the ability to move Artillery depends upon the protection of the teams from hostile fire.

**1556. The limbers.**—The position to be occupied and the formation to be taken by the limbers depend upon the nature of the cover available. To secure the maximum protection and to have free and prompt access to the guns are the objects in view in the choice of position for the limbers.

Concealment from view and protection from fire as well are secured by placing the limbers behind vertical cover. When such cover is available the limbers are ordinarily placed in section or double section column parallel to the cover.

Ridges having easy slopes afford concealment from view. They do not, however, afford protection from searching fire.

[illegible] effects of searching fire in such cases may be avoided or [illegible]ced in amount by placing the limbers more than 400 [illegible] in rear of the covering crest.

[illegible] limbers can not be echeloned with respect to the firing [illegible] they should be at least 500 yards in rear of the guns.

[illegible] impracticable to conceal the limbers from the view of the enemy, they should be posted as far from the guns as [illegible] of the case warrant, and formed in line, faced [illegible] the enemy, with as wide intervals between carriages as [illegible] will permit.

*The combat trains.*—In action the battery combat trains [illegible] and are posted as a battalion group. For a [illegible] the group the first considerations are protection [illegible] the enemy and covered approaches to the firing [illegible] batteries. Other considerations are: Ample [illegible] parking the carriages with considerable inter- [illegible] roads running back toward the position [illegible] station established by the ammunition train; [illegible] communication with the battalion and [illegible] stations.

[illegible] that the greatest distance between the [illegible] and any firing battery position be not [illegible] may be somewhat increased when ample [illegible]

### Section 4. Deflade and Cover.

1561. [illegible] protection from hostile fire is concealment.

1562. [illegible] means of concealment is the deflade [illegible] points within the enemy's position. Com- [illegible] the flashes of the guns to be in- [illegible] enemy's position. Such concealment requires [illegible] of about 4 yards.

1563. [illegible] of a position it is necessary to de- [illegible] which can be secured while keeping the [illegible] of the shortest range to be used above the mask [illegible].

1564. [illegible] is to be used the necessity for [illegible] through the sights fixes the position to one

very near the line from the mask to the target. Similarly, little concealment is possible when very short ranges must be used.

**1571.** Positions which are seen against the sky from the enemy's line are particularly visible. Similarly, any position which tends to give matériel or personnel a clear definition as seen from the enemy's position increases the exposure.

Positions in the shadow of trees, against a neutral background, in weeds, brush, or growing crops greatly decrease the visibility.

The outlines of matériel may be broken by tying branches, etc., to the caissons, wheels, and other parts.

The dust raised by the discharge of the pieces may be reduced by wetting the ground or by covering it with wet straw, branches, or other noninflammable material.

**1572.** Protection from observation by aircraft is obtained by posting the guns under trees, by placing brush or small trees around the guns, by providing an overhead screen of the same color as the surrounding terrain, and by any means of breaking the outlines of the matériel. Complete immobility on the part of all the personnel during the time that hostile aircraft are in observation is also an important means of avoiding notice.

**1573.** While concealment from view is of great importance, material cover must never be neglected. Especially when large forces are engaged, the lulls in the action provide ample time which can be utilized in the preparation of artificial cover.

**1574.** As soon as possible after the occupation of a position the executive, under such instructions as the captain may give, begins intrenching by filling in the space between the aprons and the ground and by providing protective cover, preferably by sand bags, between the adjoining wheels of the pieces and their caissons.

The preparation of this cover is secondary only to the actual firing and the supply of ammunition. It is habitual and is carried out by the executive except on the express order given by the captain at the time of occupying a particular position.

Grain sacks or other material suitable for sand bags will be carried on the carriages in campaign.

**1575.** The first cover provided should be constructed with a view of its being developed into complete protection as the occupation of the position continues.

**1576.** The plan to be followed depends upon the terrain. Since positions are habitually concealed, parapets may usually be constructed. Such construction is usually independent of the nature of the soil; it has the advantage of not disturbing the surface of the ground on which the matériel rests. The surface frequently makes a better gun platform than the subsoil.

Suitable protection obtained through the use of parapets is shown in the following diagram. The earth for the parapet may be obtained in part as indicated or all of the earth may be taken from the front, leaving the ground immediately in rear of the carriages undisturbed.

**1577.** When the position is on flat terrain which is visible to the enemy, gun pits may become desirable to increase the concealment. The following diagrams show a suitable type of pit.

**1578.** Cover for the executive and the telephone operator at the battery may be obtained by the use of one of the fifth section caissons, by constructing parapets, by digging a pit, or by a combination of these methods.

**1579.** Since observation stations must be so placed that the enemy's position is clearly visible, special measures must be taken to secure concealment and protection.

Particular care must be taken to avoid movements which might be visible to the enemy in the vicinity of the station. All instruments must be so placed as to secure the maximum concealment consistent with efficient observation.

It is usually necessary to construct both artificial concealment and protection.

**1580.** The protection which can be afforded to the material is necessarily limited by considerations affecting the ease of service of the pieces. When the position is to be occupied for a considerable length of time it is essential to provide cover, in which the personnel may be secure during lulls in the firing and during the periods in which the men must rest.

Details of the construction of such cover are so dependent upon the terrain, the situation, and the available material that only the most general rules can be prescribed.

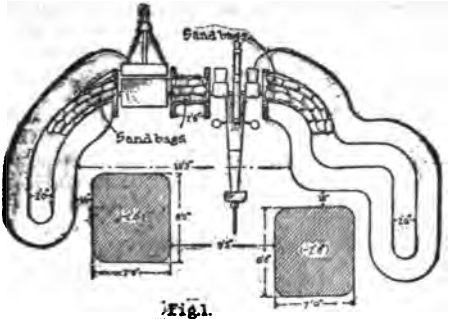
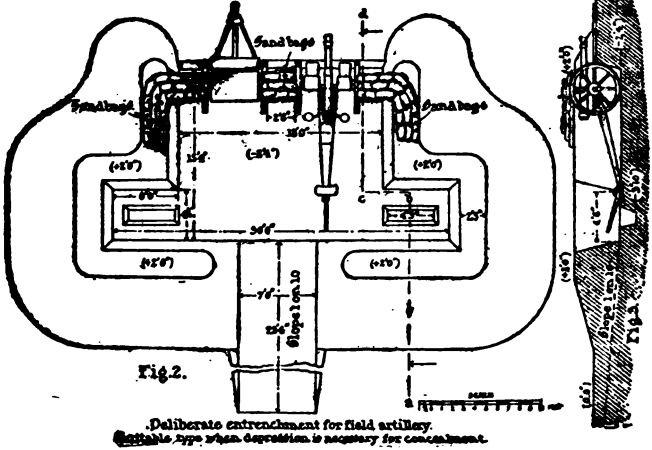



Fig.1.

Deliberate entrenchment for field artillery.
Protection against rifle fire and shrapnel.


Sand bags
Sand bags
Sand bags

Separate cover for each gun squad should be provided in the immediate vicinity of the pieces. Overhead cover against shrapnel and shell fire from the smaller calibers is essential. Overhead protection against the heavier shells is seldom practicable. Two to three feet of earth is, therefore, the usual amount of overhead cover provided. Drainage and other sanitary arrangements are of the greatest importance. The floor space in the cover provided for each gun squad should not be much less than 7 by 30 feet. Separate cover is provided for the executive, his assistant and telephone operator, and for the special details.

**1581.** In positions which are occupied for several days special care must be taken to improvise facilities for proper cooking by the organization cooks. Cooking places must be under cover at places so located that meals may readily be carried to all parts of the position.

Even though field ranges can not be brought up the utilization of such material as can be had in any inhabited country should make it practicable to avoid the disadvantages of individual cooking.

### Section 5. Use of the Special Details.

**1593.** The method of using the special details in the reconnaissance, selection, and occupation of a position must be sufficiently flexible to be adapted to varied conditions and circumstances. For training the detail a carefully planned system must be followed to accomplish satisfactory results. Such a system is outlined below. When it is used as a basis of training, simulated casualties among personnel and mounts and injuries to matériel, suitable tactical situations and the choice of varying kinds of terrain may be depended upon to stimulate interest, to prevent blind reliance on a fixed scheme, and to adapt the detail to meet emergencies.

**1594.** When work is to be by battalion the agent reports to and remains with the battery commander until the battery is reported in order, when he is sent to report to the battalion commander.

**1595.** Three blasts of the whistle is the signal for the battery officers, the first sergeant, and the special details equipped for reconnaissance to report to the battery commander. If neces-

sary the chiefs of platoon and of section call out passing back the command Detail. As the detail rides up it may conveniently form in the following order:

| | | | |
|---|---|---|---|
| | | 0 | Battery commander. |
| | | 0 | Bugler. |
| | | 0 | Instrument sergeant. |
| Scout No. 2 | 0 | 0 | Range finder. |
| Telephone corporal | 0 | 0 | Scout No. 1. |
| Operator No. 1 | 0 | 0 | Operator No. 2. |
| Horseholder | 0 | 0 | First sergeant. |

It is reported to the captain by the instrument sergeant, as, for example, "Sir, the detail is present," or "Operator No. 1 (or such member) is absent, sir."

If the captain or the instrument sergeant desires to verify the detail he commands, **CALL OFF**. The detail calls off in order from left to right and from rear to front.

**1596.** When the officers, first sergeant, and the detail have reported the captain gives instruction as follows:

1. The tactical situation.
2. Whether or not the command is to follow at once.
3. The time and place for subdivision, or that this information will be communicated later.
4. The route to be followed.
5. The rate of march.

**1597.** The first sergeant is responsible that the route is marked. Should he be uncertain as to when this is to be done or on any point in connection therewith, he asks the captain for information.

**1598.** To mark the route the first sergeant calls **Marker** at each point where he desires one placed. Members of the detail fall out and are posted in the same order in which they call off.

**1599.** The route is marked by the relay method; that is, operator No. 1 relays from battery to operator No. 2; operator No. 2 from operator No. 1 to telephone corporal and so on. An exception to this method is that any marker intrusted with an oral message to the rear, the necessity for which should be infrequent, remains in place until he has delivered it. A written message may be transmitted from a marker to his relief.

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commander.

1595.

**1600.** If caisson corporals are available, they can profitably be used as connecting files between the battery and the first marker, operator No. 1. They then act as ground scouts by selecting the best route for the battery to pass over and at the same time make it possible for operator No. 1 to keep considerably closer to the remainder of the detail.

**1601.** The instrument sergeant is always responsible that the detail, when together, rides at a collected and orderly gait and keeps at a suitable distance behind the captain.

**1602.** On approaching a position the instrument sergeant exercises particular care to keep under any available cover. Ordinarily it will be possible for the detail to halt together in rear of a crest while the captain rides forward to make the reconnaissance. As a usual thing the captain will dismount before he becomes exposed. The orderly, who remains behind, watches the captain, and when the latter is about to dismount rides up to take his horse. In doing this he comes up on the right of the captain's horse and, without dismounting, takes the reins as they are passed to him. This puts the off side of the captain's horse next to the orderly and leaves the near side free for mounting.

**1603.** If the captain, in making his reconnaissance, disappears over the covering crest, he is followed and kept in view by the instrument sergeant. If the latter also disappears, he is followed by the range finder, who in turn is followed by scout No. 2, and so on, each man being careful to keep in view the man next ahead. These connecting files remain mounted if the captain remains mounted; they dismount if he dismounts.

**1604.** When the battery commander calls **Detail** or signals by three blasts of the whistle, the instrument sergeant, scout No. 2, and range finder dismount. Scout No. 2 passes the reins of his horse to the horseholder, who rides up on his left. The range finder links his horse to scout No. 2's horse. The instrument sergeant links his horse to the range finder's horse.

The linked horses having been turned over to the horseholder, these three men approach the battery commander at intervals such that to hostile observation they will present the appearance of infantry rather than that of a battery staff.

The battery commander then states so as to be heard by all three:

1. Any later or additional information regarding the situation.
2. The limits of the sector with the location of the enemy and friendly troops.
3. The reference point or points.
4. The target, if known.
5. The approximate location of the battery commander's station.
6. The approximate position of the guns.
7. The aiming point.
8. Kind of communication.
9. Any necessary instructions relative to artificial cover for the battery commander's station.

If the battery commander fails to give any necessary information, it is asked for. If the range finder and scout No. 2 are not yet up, they secure all necessary information from the instrument sergeant upon their arrival at the station.

**1605.** The captain may then proceed, mounted or dismounted, to reconnoiter the gun position. In the meantime the instrument sergeant and the range finder set up their instruments, taking the maximum degree of cover which the position affords, and secure the data for the target or targets or for prominent points within the sector. Scout No. 2 from a well-concealed place observes the target, looks for other targets within the sector, and, unless otherwise employed, makes a sketch of the sector.

If time is available, the instrument sergeant and the range finder assist scout No. 2 in plotting prominent points of the sector and in recording firing data therefor.

**1606.** In open country it will often be practicable to describe or indicate satisfactorily the position for the guns without visiting it. In broken or close country or when the station and the gun position are widely separated or when the position is largely influenced by the covering crest, it will usually be necessary for the captain, either before or after the establishment of his station, to visit and establish the gun position.

Often time will be available, and it will be advantageous, although not positively necessary, for him to visit the gun position.

**1607.** If the captain visits the gun position the remainder of the detail, keeping under cover, follow him in the following order:

0 Battery commander.
0 Bugler.
Operator No. 1 0 0 Scout No. 1.
First sergeant 0 0 Operator No. 2.
Horseholder with led horses 0 0 Telephone corporal.

If the captain calls out **Gun markers**, operator No. 1 and scout No. 1 dismount, turning over their horses to operator No. 2, who rides upon the right of scout No. 1.

The telephone corporal, if not already informed, at once asks what kind of communication to establish.

The battery commander marks either the right or left gun with scout No. 1 or operator No. 1 and places the other man on the line. To aid the executive the man who marks the fixed flank of the battery faces in the direction of fire with one arm extended in the direction of fire and one in the direction of the line of guns. If only a single marker is used he is posted as flank marker.

If not already known to them, scout No. 1 and operator No. 1 will ask as to:

1. The aiming point.
2. The direction of fire.
3. Kind of communication.

**1608.** If necessary or desirable the captain, accompanied by the orderly and the first sergeant, rides to reconnoiter a position for the limbers, and, in case the battery combat train is posted separately, a position also for the latter. One or both of these positions may frequently be selected prior to the selection of the battery station and marked by one or more members of the detail. All positions being chosen, the captain informs the first sergeant as to:

1. Position for the combat train, whenever the battery combat train is posted separately.
2. Gait for the battery in approaching the position.

3. Any necessary instructions relative to the formation and manner in which the battery should approach and occupy the position.

4. The aiming point.

5. The position for the limbers.

The first sergeant will ask for information covering any or all of these points, if they have not been made clear to him. He then reports to the executive with the above information and guides the battery to the position.

**1609.** When the first sergeant has received his instructions the captain rides to the vicinity of his station and turns over his horse to the bugler, who goes to the position of the horses belonging to the detail and takes charge of them.

**1610.** In approaching the position, the executive, in the absence of instructions, understands that the position is ready for occupancy if he sees that the gun markers are posted. If he sees that they are not posted, he halts in a suitable place until they are, or until he receives instructions. In all cases he should reach the position sufficiently in advance of the battery to determine the best method of going into action.

**1611.** When telephone or buzzer communication is used the telephone corporal sees that operator No. 2 runs out the wire by beginning either at the battery commander's station or the position of the battery, depending upon which is nearer to the place where he left his horse. Ordinarily the wire is run out so as to leave the reel with operator No. 1 at the position of the battery. This permits the buzzer at the station to be plugged in and gotten ready for operation and affords the executive latitude in placing his instrument without interfering with the instrument at the station. Wherever the free end of the wire may be, enough slack should be left to permit considerable movement of the operator. When the command **Close station** is given, the wire is reeled up by the operator who has the reel. The telephone corporal carries the captain's megaphone, and operator No. 1 carries that of the executive.

**1612.** With obvious modifications one or more of the gun, combat train, and limber positions may be selected before the battery station and designated to the entire detail before or during reconnaissance.

[illegible] remembered that the detail should work [illegible] each man has his particular part to play, [illegible] to assist or take the place of any man [illegible] every member should therefore be fully trained [illegible] the others. In order to perform these duties [illegible] efficiency, and cooperation, each must be furnished information by the battery commander. To this end he is trained to know what information is required for the proper performance of his duties and to [illegible] of it if, at the proper time, the same has not been made clear to him.

[illegible] the duty of all members of the battery detail to call the attention of the captain, the executive, or other responsible individual to any obvious error in reconnaissance and selection of position and in preparation and conduct of fire.

The following is a summary of duties in the battery detail:

INSTRUMENT SERGEANT.

1. In general charge of the instruments and equipment used by the detail.
2. Assists and commands the detail.
3. Keeps the detail under cover when approaching or in the vicinity of the position.
4. Asks the battery commander, if not already informed, as to:
   (*a*) The situation.
   (*b*) The limits of the sector with the location of the enemy and friendly troops.
   (*c*) The reference point or points.
   (*d*) The target.
   (*e*) The approximate location of the battery commander's station.
   (*f*) Any instructions relative to artificial cover for the station.
   (*g*) The approximate position of the guns.
   (*h*) The aiming point.
   (*i*) Kind of communication.
5. Sets up the telescope and the aiming circle, taking as much advantage of cover as the location of the station affords.

6. Computes the firing data.
7. During firing, keeps or causes to be kept the firing record and renders assistance in observing the fire and in collecting, recording, and transmitting data.

RANGE FINDER.

1. Responsible for the condition and care of the range finding instrument.
2. Acts as route marker.
3. Asks the captain or the instrument sergeant, if not already informed, as to:
(*a*) The situation.
(*b*) The limits of the sector, with the location of the enemy and friendly troops.
(*c*) The reference point or points.
(*d*) The target.
(*e*) The aiming point.
(*f*) Any necessary instructions regarding artificial cover for his station or instrument.
4. Finds the ranges required by the instrument sergeant and scout No. 2.

SCOUT NO. 2.

1. Acts as route marker.
2. Asks the captain or instrument sergeant, if not already informed, as to:
(*a*) The situation or problem.
(*b*) The sector, with the location of the enemy and friendly troops.
(*c*) The target.
3. Observes the sector; keeps the target under observation, reporting change, disappearance, reappearance, movement, or effect.
4. Draws panoramic sketch or map of sector.
5. When not otherwise engaged makes such special observations or keeps such data as may be required by the captain or the instrument sergeant.

SCOUT NO. 1.

1. Acts as route marker.
2. Marks line of guns.
3. Asks the captain or operator No. 1, if not already informed, as to:
(*a*) Direction of fire.
(*b*) Aiming point.
(*c*) If he is to mark a flank gun.
(*d*) Kind of communication.
4. Acts as recorder for operator No. 1, or otherwise assists him in maintaining communication with the battery station.
5. Acts as recorder for the executive.

TELEPHONE CORPORAL.

1. Under general supervision of the instrument sergeant, in charge of and responsible for all the signal equipment of the battery. He makes such tests and repairs as may be authorized, and at the first opportunity reports to the captain all trouble which he can not remedy.
2. Acts as route marker.
3. Asks the captain what kind of communication to establish, and is responsible that same is established quickly and efficiently.
4. Acts as operator at battery station on the battalion line.
5. When verbal communication is used, he may be required to transmit or relay commands to the battery.
6. Reports to the instrument sergeant or captain when communication is established with the battery or with the battalion station and any breaks occurring.

OPERATOR NO. 2.

1. Acts as route marker.
2. Assists the horse holder in placing and linking the horses of the detail.
3. Under direction of the telephone corporal, establishes the kind of communication ordered and acts as operator at the battery station.

4. Reports to the telephone corporal or to the captain when communication with the battery is established or broken.

OPERATOR NO. 1.

1. Acts as route marker.
2. Marks line of guns.
3. Asks the captain or scout No. 1, if not already informed, as to:
(*a*) Direction of fire.
(*b*) Aiming point.
(*c*) If he is to mark a flank gun.
(*d*) Kind of communication.
4. Assists in establishing the kind of communication ordered and acts as operator at the battery.
5. Reports to the executive when communication has been established with the battery station and any break occurring.

FIRST SERGEANT.

1. Marks the route.
2. Asks the captain, if not already informed, as to:
(*a*) Position for the combat train, whenever the battery combat train is posted separately.
(*b*) Gait for the battery to use in approaching the position.
(*c*) Any necessary instructions relative to the formation and manner in which the battery should approach and occupy the position.
(*d*) The aiming point.
(*e*) The position of the limbers.

BUGLER.

1. Acts as horseholder for the captain.
2. Watches or assists in holding all the horses belonging to the detail.

AGENT.

1. Acts as agent between the battalion commander and the battery commander.

HORSEHOLDER.

1. Asks the captain where to place the horses of the detail and is responsible that they are secured in that place.

## Section 6.—Combat.

WITH THE ADVANCE GUARD.

1679. The action of Field Artillery with an advance guard will vary with the mission. It should not occupy positions from which it can not be withdrawn without a general engagement, perhaps not intended by the commander of the force. Its main duties are to break down any resistance to the advance of the other arms or to cover their retirement if necessary.

Positions with as much cover as possible should be chosen, with preservation of complete freedom of maneuver, while the guns themselves should be placed at wide intervals and used with great rapidity of fire, so as to deceive the enemy, if possible, as to the strength of the force opposed to him.

THE ATTACK.

1680. In general, when large forces are engaged, the attack presents three principal phases:

1. The preparation.
2. The decisive action.
3. Securing the victory, or averting disaster in case of failure.

The use of Artillery in the attack will vary in conformity with these different phases.

1681. In the preparatory stage Artillery has for its objectives those parts of the enemy's force which at the time most oppose the action of our Infantry. Until our Infantry comes within effective small-arms fire the principal target will, therefore, be the hostile Artillery. As the progressive advance of our Infantry brings them within effective rifle fire, more attention must be paid to the hostile Infantry.

Obstacles, such as walls and abatis, which impede the advance of our Infantry should, if possible, be destroyed by Artillery fire.

**1682.** The counter batteries acting from masked positions must dominate the enemy's Artillery with the greatest possible rapidity; the Infantry or breaching batteries frequently taking, on account of their more varied rôle, a less defilade than the counter batteries, open upon the hostile Infantry and obstacles. The designation of batteries as counter or Infantry batteries is not permanent and may vary with the progress of the engagement.

**1683.** The Artillery preparation for the Infantry attack is, in general, carried on simultaneously with the Infantry advance. If, however, the enemy has fully occupied his position, or the attack is able to form under cover close to the hostile position, and thus has only a short distance to advance, the preparation may take place both before and during the attack.

**1684.** Before opening fire with any unit of Artillery on any objective, care must be taken to have at hand another unit ready to open upon any of the enemy's Artillery which may attempt to prevent the first unit from accomplishing its mission by forcing it to cease firing.

In order to have batteries available for this counter attack economy of forces must be practiced; no greater force must be used at first than is absolutely necessary.

**1685.** In the decisive attack a special preparation is necessary. The most rapid and intense concentration of fire of all the available Artillery is brought to bear upon the objective against which the Infantry is to advance.

During this special preparation the counter batteries continue or resume their fire on the hostile Artillery.

Some of the Infantry batteries may be sent forward to closer positions as the attack progresses, but it is to be remembered that during such changes of positions the fire of these batteries is lost to the assailant at a most critical time, and such movements should be avoided if possible. The range and ease of manipulation of the fire of Field Artillery enables it to dispense with maneuvers which, in the last analysis, are prejudicial to the Infantry which it is charged with supporting.

**1686.** As our attacking Infantry reaches the danger zone of our Artillery the commander of the Infantry firing line should, by a preconcerted signal—such [illegible] the firing line

of a conspicuous and suitable flag—inform the Artillery commander of the fact. The Artillery then increases its range so as to impede the movement forward of possible hostile reserves, and to take the enemy in rear in case he retreats.

**1687.** When the third phase of the attack is reached, accompanying batteries will be designated from the Infantry batteries, whose mission will be to reach the captured position as soon as possible after the Infantry, in order to pursue with their fire the retreating enemy and to aid in repulsing any offensive return. They should cover with their fire the advance of troops which may be pushing on in pursuit, and break down all efforts of the enemy to reform and renew the fight.

**1688.** In case of reverse, Artillery directs upon the enemy's attacking troops every gun which can be brought to bear, in order to destroy their morale and to assist the repulsed troops in the renewed effort which may lead to victory. If the repulsed troops continue to be forced back, the Artillery must cover their withdrawal, resisting the advance of the enemy, if necessary, until annihilated.

### THE DEFENSE.

**1689.** The defense requires, before all things, skilful utilization of the available ground in order to develop fire effect to the utmost.

Exhaustive preliminary reconnaissance of the position, improvement of communications within it, determination of the ranges, especially of those to probable Artillery positions of the enemy and to points in the probable direction of the Infantry attack, are advantages which the defense must utilize so far as time permits.

**1690.** In most cases it will be advisable for the Artillery to be held in readiness at first, even if the position has been artificially strengthened. For this alone will insure the Artillery meeting the direction of the attack with a correct front and will prevent it being forced to premature changes of position. This also affords the best means of preventing the enemy from gaining an insight into our own dispositions and intentions before the action has commenced.

In preparing positions which may be occupied, a most extensive use is to be made of earth cover. If time permits, it is

advisable to provide masks and to improve the field of fire by cutting down hedges and trees. It is of the greatest importance to place a large supply of ammunition in readiness in the immediate vicinity of the guns.

As soon as the general direction of the enemy's attack is recognized, but if possible before the enemy brings his batteries into action, the fighting position is occupied. Sometimes flanking Artillery fire can be employed with advantage to search dead angles before the fighting position.

**1691.** The commander of the troops will usually order the opening of fire. Firing at excessive ranges and upon small hostile detachments is to be avoided, for this assists the enemy in locating the guns.

**1692.** As a rule, the action will be commenced by engaging the assailant's Artillery, and, as a rule, the whole of the defender's Artillery will be employed if necessary to attain superiority.

The commander of the forces gives the general instructions for resisting the Infantry attack.

When the enemy's infantry advances to the attack, the Artillery must make them their target, regardless of the enemy's Artillery fire, if necessary leaving cover for this purpose. If possible, the enemy's batteries should at the same time be held in check, but the repulse of the Infantry attack must remain the most important feature.

If, even before the Infantry attack commences, the enemy's Artillery proves itself so superior that it appears hopeless to continue the Artillery action, the batteries may temporarily seek cover from the enemy's fire. But as soon as the enemy institutes the decisive attack every gun must at once, even without particular orders, resume the struggle and engage the enemy's Infantry only, heedless of the Artillery fire. A few batteries, even single ones, thrown into the struggle at unexpected points may be of especial use at this juncture.

**1693.** If, nevertheless, the attack succeeds, part of the Artillery must prevent the advance of hostile batteries into the captured position, part must concentrate its fire upon the hostile Infantry which has penetrated, and, in cooperation with the reserves, expel the enemy from the captured position. This is

one of the tactical situations in which steadfast endurance to the last is imperative. Even if it lead to the loss of the guns, this is in the highest degree honorable.

### WITH THE REAR GUARD.

**1694.** As the principal duty of a rear guard is to gain time, and as it should be able to withdraw without serious loss, it should be strong in Field Artillery. Positions should be selected so as to utilize the long range of the guns to force the enemy to deploy at the greatest possible distance; such positions must also afford sufficient facilities for withdrawing. In withdrawing, small changes of position should be avoided, the retirements from one position to another being over as great a distance as is consistent with delaying the enemy to the utmost.

### HORSE ARTILLERY WITH CAVALRY.

**1695.** In an advance, Horse Artillery should march united and well toward the head of the main body of the Cavalry command. Ordinarily no Artillery is attached to the advance guard.

**1696.** In large commands there may be time for the regular issuance of orders for combat by the Cavalry commander, but frequently in large commands and very often in small commands there will be no time for consultation and the Artillery commander will receive only very brief and general instructions, if any at all. Therefore it is imperative that the Field Artillery commander be with the Cavalry commander when combat is imminent, so that he may receive his orders directly, if any are to be given, or that he may get the decision and grasp the plan of action by hearing the orders for the subordinate Cavalry commanders.

**1697.** The Horse Artillery commander must not only have great quickness, decision, and tactical instinct for successful cooperation, but he must be constantly in touch with the situation, must be constantly aware of the definite location of his units, must have them well in hand and so disposed as to meet all possible emergencies, and must have sure and rapid means of communication with them.

**1698.** For this reason when combat is imminent battery commanders and their details should be at the head of the leading battery of their battalion, if not further forward in the march column.

In such cases, as the Cavalry and Artillery commanders will usually be with the advance guard, the battery commanders and their details may be brought forward and march at the rear of the advance guard.

**1699.** Rapidity and correctness of decision on the part of Field Artillery commanders, accuracy and rapidity of fire on the part of the enlisted personnel and mobility as regards the guns are essential to Horse Artillery success.

**1700.** When Cavalry meets Cavalry and a mounted action is imminent the friendly Cavalry will make a rapid deployment, generally either to the front or to one of its flanks.

In the absence of any orders, the Artillery commander must make a quick decision as to the position to be taken up by the Artillery and his command must be moved thereto with the utmost rapidity.

A position on one or both flanks of the attacking line is generally best; a position in rear of the Cavalry attacking line is generally faulty, as the advance of the friendly troops masks the guns too soon.

In such an action any attempt at dispersion of the Horse Artillery into units less than a battalion is usually also faulty, for several reasons: (*a*) Time is lacking for the necessary reconnaissance and issue of orders; the limited time usually demands a simple plan; (*b*) time is lacking for the concentration of fire upon the most important target; (*c*) with the batteries dispersed, one or more batteries are almost certain to have their fire masked too soon by the friendly Cavalry.

The following general rules should govern the Horse Artillery commanders in their choice of position and conduct of the action:

(*a*) The position for the guns should be chosen with a view of obtaining the most effective fire on the enemy's Cavalry previous to the Cavalry charge and to covering with effective fire the area over which our charge is to be made.

(*b*) The position chosen should permit the fire of the guns to be delivered up to the moment of collision, and should not hamper in any way the movement of our Cavalry.

(*c*) Long-range firing at the enemy's guns is to be avoided.

(*d*) While the opposing Cavalry is the most important target, if the enemy's Artillery is inflicting losses on our Cavalry, it will be necessary to assign batteries to hold them in check. When the fire of our guns becomes masked by the movement of our Cavalry, they may all be turned upon the enemy's Artillery.

(*e*) If the charge succeeds, the Artillery should advance as soon as possible; if it fails, the guns should form a rallying point for the Cavalry, which should invariably rally in rear of a flank and not fall back directly on the guns.

(*f*) In the mounted combat and in the pursuit by Horse Artillery, indirect laying has no place.

**1701.** In supporting Cavalry acting dismounted, the same principles govern as herein laid down for Artillery in the field generally. The extent of front covered leads to a wide dispersion of Horse Artillery units. Their rôle demands that their action should be characterized by promptness and a readiness to take the initiative. Indirect laying may be used, provided it causes no loss of time.

**1702.** A particular and frequent phase of action with Cavalry dismounted is an advance for the seizure of an important position.

In this case as quickly as the Cavalry advance guard has gained the position, the batteries should push rapidly forward at a rapid gait and establish themselves for its defense.

The Artillery reconnaissance details with the Cavalry advance guard should be sufficiently numerous to cause no delay in the selection of positions and in guiding the batteries thereto.

### Section 7. Ammunition Supply.

**1703.** The organization and operation of the divisional ammunition service is the duty of the Field Artillery. Artillery officers must, therefore, understand the principles governing the supply of small-arms ammunition as well as of Artillery ammunition and must study the dispositions suitable for the supply

of the different arms in action. The principles are set forth in Field Service Regulations. Sound judgment in making suitable dispositions is to be acquired through the study of that part of the regulations of the several arms relating to combat and through the solution of tactical problems involving ammunition supply.

1704. The conditions of modern war demand very great expenditures of ammunition. While such expenditures must unhesitatingly be made when necessary, it is the duty of commanders of all grades to see that due economy is exercised and to make provision for timely replenishment of ammunition.

No means should be neglected for bringing up ammunition to troops in action and for keeping up the fire, on the maintenance of which the success of the combat may depend.

1705. The supply of ammunition is effected from the rear to the front. It is the duty of the commander of each unit in the ammunition supply system to ascertain the position of each of the units which he is to supply and to establish contact with such units. Troops engaged in battle must be kept free from all anxiety as to the ammunition supply.

1706. The commander of the line of communications is responsible for the service of ammunition from the base to include its delivery to the ammunition trains.

The commander of divisional trains is responsible for the conduct of the ammunition train until it is released from his control.

The commander of the ammunition train is subordinate to the commander of trains until his train is released from the control of the latter.

1707. Base ammunition depots are supplied from arsenals.

Advance depots are supplied from base depots.

Ammunition columns are replenished from the advance depots.

Ammunition trains are replenished from the ammunition columns of the line of communications. In exceptional cases where the rail or water heads of the line of communications are sufficiently near, the ammunition trains may be replenished directly from the advance depots.

Combat trains are replenished from the divisional ammunition trains.

The caissons of the firing battery are replenished from or replaced by caissons of the combat train.

Within the firing battery ammunition is replenished as described in paragraphs 1033 to 1038.

1708. An ammunition-distributing station is the place to which combat trains are sent for resupply.

An ammunition refilling point is the place where the ammunition train is refilled.

An ammunition rendezvous point is the place to which ammunition columns of the line of communications are dispatched and where they are met by agents of ammunition trains and conducted to refilling points.

1709. Combat and ammunition trains are organized as provided in Tables of Organization.

1710. The commander of the ammunition train is the immediate subordinate of the divisional Artillery commander, after the ammunition train has been released from the control of the commander of the trains.

1711. It is the function of the commander of a unit to which a combat train is assigned to regulate the supply of ammunition from the combat train to the guns and to send the empty caissons of the combat train to the distributing station.

Empty caissons of the firing battery may often be sent directly to a distributing station.

1712. The ammunition train, as a rule, marches in rear of the main body. At the beginning of an engagement the sections of the train are directed to proceed to stations from which practicable routes radiate to the combat trains. Usually the most suitable preliminary locations will be found at a distance of from 2 to 3 miles in rear of the line of battle. Inasmuch as the expenditure of ammunition will not be the same for all parts of the line, it is, as a rule, desirable to hold the sections together during the earlier stages of the engagement. As the probable course of the engagement becomes known it may be advisable to subdivide the sections and to station the subdivisions at such places as will facilitate the resupply of the combat trains.

1713. A position selected as distributing station should afford free access from all directions and ample space for posting the carriages so as to leave room for a third carriage to be driven

between any two adjacent carriages, and should be so located as not to interfere with the movements of other troops or trains.

All routes leading from a distributing station must be reconnoitered and arrangements made for probable movements.

**1714.** The position of combat trains is discussed in paragraphs **1542** to **1545** and **1659** to **1666**.

**1715.** The commander of the ammunition train furnishes an agent to connect the Field Artillery commander's headquarters with the train.

Similarly the commander of a section furnishes an agent to connect with the combat train or with the headquarters of the unit which the section is to supply.

**1716.** The positions of an ammunition train and of its sections, when detached from it, are marked by a red flag during the day and by a red lantern at night.

**1717.** The ammunition on hand for 3-inch field guns, including that carried in the ammunition train, is 464 rounds per gun, distributed as follows:

| | Rounds. |
|---|---|
| With the firing battery | 190 |
| With the combat trains | 168 |
| With the ammunition train | 106 |
| Total | 464 |

**1718.** The limbers of Horse Artillery operating with Cavalry may or may not be filled, depending on the nature of the operations, in the discretion of the Horse Artillery commander. The ammunition train of a Cavalry division transports 53 rounds per gun.

### Section 8. Field Artillery Supports.

**1719.** The security of Field Artillery on the march or in combat must be provided for either by the distribution of the other arms or by bodies of Infantry or Cavalry, called Artillery supports, specifically detailed for the purpose. When such is not the case the necessary protection must be furnished by the nearest unit whose mission will permit.

**1720.** The Artillery commander takes general measures to insure the support of the Field Artillery. Subordinate com-

manders, by the suitable disposition of Artillery scouts, supplement his arrangements or, if security is not provided by the other arms, provide for early warning against surprise or attack.

**1721.** When operating with Infantry the detail of a support is not necessary except when the Artillery is separated from the main body or occupies a position in which its flanks are exposed. The detail of a special support is to be avoided whenever possible.

**1722.** When operating with Cavalry, especially against Cavalry, the detail of a support will be almost habitual for the following reasons: (*a*) In dismounted actions the dispersion is generally great, and hostile Cavalry may penetrate the intervals; (*b*) in mouted action, the Artillery is most frequently compelled to take up a flank position and is thus exposed to a flank attack; (*c*) the phases of mounted combat change so rapidly that Field Artillery amply protected by the distribution of troops at one moment may be seriously exposed the next.

**1723.** On the march, if there is danger to the flanks from bodies of the enemy, the Artillery may be broken into columns not longer than a regiment; it then marches like a convoy with Infantry or Cavalry in front, in or opposite the center and at the rear. On marches through long defiles, or dense forests, or at night, it may be advisable to place the Artillery near the rear of the column.

The country must be thoroughly reconnoitered by patrols within long rifle range.

### Section 9. Transportation by Rail.

**1728.** The arrangement for transportation of troops by commercial railways is a function of the Quartermaster Corps.

To enable the quartermaster properly to estimate for cars he should be informed as to the exact number of men and animals and the amount of matériel and equipment to be transported for each separate battery and headquarters. Except in theaters of actual operations the quartermaster must also be given such itemized lists of property and weights as will enable him to prepare bills of lading. To assist the quartermaster each battery

commander and each headquarters should furnish a list of the numbers and kinds of cars required for the unit.

**1729.** Whenever practicable sleeping cars are provided for the personnel on journeys of 24 hours or greater duration. Sufficient cars are furnished to provide a section for each three men and for each two officers. In determining the number of cars allowance must be made for employees of the sleeping car company and of the railroad. These employees include a porter for each car, two cooks for each tourist kitchen car, a sleeping car conductor, and a railroad agent. Each of these employees utilizes one berth.

**1730.** Tourist sleepers usually contain 14 or 16 sections and tourist kitchen cars 12 sections. A standard sleeper has 13 or 14 sections, including the drawing-room and stateroom.

For the transportation of 5 officers and from 130 to 150 men 3 tourist sleepers and 1 tourist kitchen car are required. For the transportation of 5 officers and from 150 to 195 men 4 tourist sleepers and 1 tourist kitchen car are required. These figures allow for space for the railway employees.

**1731.** When day coaches must be utilized and the journey is considerable a seat should be provided for each man. On this basis a standard day coach will carry about 30 men.

**1732.** When kitchen tourist cars can not be provided and meals are to be prepared en route, a baggage car for each train should be furnished for use as a kitchen.

**1733.** The carriages are transported on flat or gondola cars or occasionally in automobile cars. Flat cars are more convenient to load and unload, especially when permanent facilities are not available.

A flat car of ordinary length—about 36 feet—will carry three Artillery vehicles complete while leaving enough free space to facilitate loading and unloading. For a battery on a war footing six flat cars are thus necessary for the matériel. If the battery is on a peace footing or if the cars secured are 40 feet or more in length, five cars will suffice.

**1734.** Field wagons are transported on flat cars, three wagons to the car.

**1735.** Harness, kitchen supplies, officers' baggage, and such of the personal equipment of the men as are not necessary on

the journey are carried in a baggage car provided for the purpose.

**1736.** Box cars are provided for forage, ammunition, and other property according to the necessities. Unless the batteries are to detrain in the theater of operation ammunition should be boxed and carried in a special car.

**1737.** Box cars are usually at least 36 feet in length. The interior cross section is about 8 by 8 feet. The load capacity varies from 40,000 to 100,000 pounds. It is inadvisable, however, to load a car to its capacity, and 40,000 pounds may be assumed as the load and 1,800 to 2,000 cubic feet as the cubical capacity of the average box car.

**1738.** The weight limits the amount of ammunition and of grain which can be carried in a single box car. Cubical capacity limits the amount of military stores of other kinds, especially hay.

Twelve hundred pounds, or 100 rations, of oats occupy a space of about 40 cubic feet. Fourteen hundred pounds, or 100 rations, of baled hay occupy a space of about 120 cubic feet. When access must be had to forage during the journey, 1,200 rations is a suitable load for a forage car.

**1739.** Animals are carried in stock cars or palace stock cars. If palace stock cars are not available, a box or stock car should be provided for each six privately owned officer's mounts.

The capacity of both the ordinary and the palace stock car averages about 18 Artillery horses per car. The ordinary stock car will carry about 20 mules.

**1740.** The amount of baggage, forage, and rations to be taken depends upon circumstances, and should be definitely prescribed in the order directing the movement. Ordinarily rations and forage sufficient for three days after the completion of the journey is ample. More than this is generally unnecessary and causes delay and congestion in entraining and detraining.

**1741.** When movement from garrison or semipermanent camps is contemplated ample notice should be given, if possible, so that the necessary arrangements concerning property not pertaining to the field equipment may be made. Not less than 48 hours should be allowed for the orderly transaction of this business.

When sufficient time is not available for these purposes the security and care of such property as is left behind devolves upon the troops remaining in the garrison or camp.

**1742.** The time required for loading each train carrying Field Artillery troops depends upon the facilities for loading and especially upon the amount of equipment and supplies to be carried.

With only the equipment and supplies prescribed for organizations on the march in the field, when all ammunition is carried in the chests and when the facilities for loading are reasonably good a battery should be able to load within two hours from the time when the cars are prepared and all personnel, matériel, and equipment pertaining to the battery has arrived at the loading platforms.

**1743.** Delays and confusion in loading are chiefly due to lack of advance preparation of a definite and rational plan or to failure to follow such a plan during the loading. A common mistake is the attempt to rush the loading by assigning cars so as to begin the loading of all batteries simultaneously without adequate facilities or cars therefor. In general, confusion will be eliminated and time will be saved by making up each train complete before spotting it at the loading places. For the storage of cars and the making-up of trains ample switching facilities should be set aside. It is especially important that the loading platforms for any one battery be not widely separated. The number of trains which can be loaded simultaneously thus depends upon the available switching facilities. In general, the facilities available in leaving the ordinary garrison or in quitting a concentration camp by a single railroad limit the cars that can be placed to those necessary for a single battery. As, under a suitable plan, similar cars for the several batteries are loaded from the same platforms, the heavier stores for each organization may be transported to the loading platforms before the departure of the preceding organization. Care must be taken to avoid interfering with the loading and to keep the stores to be loaded on any one train separate from those going on another.

**1744.** Sufficient tags should be kept on hand to mark all equipment not carried in the cars with the men or not other-

wise readily identified. The loading of each class of property should be under the immediate charge of an officer, who should list all items going into each separate car, noting on each list the markings and number of the car.

**1745.** When a regiment moves by rail it is usually desirable to transport regimental headquarters, the headquarters company, the supply company, and one battalion headquarters on one train.

When a battalion moves alone the battalion headquarters may be attached for transportation to one of the batteries. In this case or when otherwise desirable the attached section of the supply company may be divided among the batteries.

**1746.** The sequence in which the various organizations move depends largely on the conditions under which the movement is made. In general, a regimental commander with his headquarters company, one of the battalion headquarters, and the supply company should move on the first train. One of the battalion headquarters should be on the last train to leave. This sequence leaves a field officer to superintend the loading of all trains, while the regimental commander with his staff has time to make the numerous arrangements necessary for the detraining and care of the various organizations upon their arrival.

The sanitary personnel should be divided among the trains. If this is impracticable, all of it should be with the last train.

**1747.** Whenever practicable each battery occupies one train with all of its personnel, animals, and matériel complete. It is, however, preferable to have trains of moderate size with good speed rather than long trains with low speed. Each battery train must therefore be loaded so that it may be readily divided into two parts (1752).

**1748.** When palace stock cars can not be obtained, additional box cars for privately owned mounts at the rate of one car to six horses should be provided. When this is done the number of stock cars may be reduced by one. When tourist kitchen cars are not obtainable the number of baggage cars and of sleepers must each be increased by one.

**1749.** When the command is on a war footing, the cars required for the regimental headquarters, the headquarters com-

pany, the supply company, and one battalion headquarters are as follows:

| | |
|---|---|
| Flat cars | 8 |
| Box cars for stores, harness, etc | 2 |
| Box car for forage | 1 |
| Stock cars | 10 |
| Baggage car, or box car with end doors | 1 |
| Tourist kitchen car | 1 |
| Sleeping cars | 3 |
| Total cars | 25 |

**1750.** The cars required to move a light battery on a peace footing are, in the sequence in which the train is arranged, as follows:

| | |
|---|---|
| Flat cars | 5 |
| Box car for ammunition | 1 |
| Box car for stores, harness, etc | 1 |
| Box car for forage | 1 |
| Stock cars | 7 |
| Baggage car, or box car with end doors | 1 |
| Tourist kitchen car | 1 |
| Sleeping cars | 3 |
| Total cars | 20 |

If no boxed ammunition is to be transported, the number of box cars may be reduced by one. If no stores other than those which are carried on the march are to accompany the battery, the number of box cars may be further reduced. The number of stock cars is sufficient to provide a separate car for privately owned mounts.

If tourist kitchen cars are not obtainable, the number of baggage cars and of sleepers must each be increased by one.

When the extra caissons for a war footing are to be taken, six flat cars are necessary unless exceptionally long cars are available.

**1751.** When the light battery is on a war footing the cars required are:

| | |
|---|---|
| Flat cars | 6 |
| Box car for ammunition | 1 |
| Box car for stores, harness, etc | 1 |
| Box car for forage | 1 |
| Stock cars | 9 |
| Baggage car, or box car with end doors | 1 |
| Tourist kitchen car | 1 |
| Sleeping cars | 5 |
| Total cars | 25 |

The same remarks as to reductions and increases of cars apply as in the case of the battery on a peace footing, except that five tourist sleepers are sufficient to accommodate the personnel with but little crowding.

**1752.** When battery trains must be divided into two sections, the first section contains the forage car, all the stock cars, and one sleeping car. The second section contains the remaining cars.

The first section should be under the command of one of the lieutenants, who should have with him the stable sergeant, the stable orderly, a horseshoer, one of the mechanics, and the number of other men that can be accommodated.

**1753.** When a battalion headquarters accompanies a battery, one additional tourist car and one additional stock car must be provided. If it is possible to provide separate cars for privately owned animals, a second additional stock car should be provided. The reel and cart will require an additional flat car only when the number of flat cars provided for the battery is reduced on account of extra long cars being available.

**1754.** If field wagons are to accompany a battery, additional flat cars at the rate of one for three wagons are provided.

1755. When one battalion headquarters and 9 of the wagons of the supply company are to move on the last train, the cars required are:

| | |
|---|---|
| Flat cars | 5 |
| Box car for stores, harness, etc | 1 |
| Box car for forage | 1 |
| Stock cars | 4 |
| Baggage car, or box car with end doors | 1 |
| Tourist kitchen car | 1 |
| Sleeping car | 1 |
| Total cars | 14 |

If possible, an additional stock or box car should be provided for privately owned animals.

1756. Horse Artillery organizations require the same number of cars as corresponding organizations of Light Artillery, with the exception of stock cars for the animals of the batteries. A horse battery on a peace footing requires 9, on a war footing 14 stock cars.

1757. When movements of large bodies of troops are involved, ordinary coaches or box cars may frequently have to be substituted for sleeping cars.

For movements of a few hours in the theater of operations, the personnel may have to ride on the flat cars. As in such cases the equipment is limited, the harness and stores may be carried on the flat cars with the carriages.

1758. In preparation for the journey all personal equipment and other property needed en route are kept separate from that not needed.

All the mechanics are provided with the heaviest hammers available. These hammers, with a supply of nails, are taken in the cars by the mechanics.

The blanket roll of each man is tagged and the rolls of each squad are tied into a bundle. These bundles, together with the officers' baggage, are carried in the baggage car.

Rations and kitchen equipment which will be needed during the journey or immediately upon arrival are placed under the

charge of one of the cooks, who sees that they are loaded in the baggage car, so as to be immediately accessible.

If the horses will probably be unloaded during the journey, each chief of section collects the feed bags belonging to his section and turns them over to the stable sergeant, who makes a memorandum thereof. The grain bags are retained by the men, who pack them with their saddles. The stable sergeant sees that the feed bags, necessary grain measures, a few bandages and disinfectants, and stable tools are placed in the center of the forage car so as to be readily accessible.

The men take their slickers or overcoats, canteens, and haversacks or saddle bags with them in the cars. Such arrangements are made as will avoid the necessity for carrying these articles while at work and insure their being properly guarded and available at the proper time.

**1759.** So far as practicable all stores, forages, etc., should be at the loading places before the train arrives (**1743**). Similarly, each battery complete with all its matériel, animals, and personnel, except those men needed as guards over stores, should arrive, so that the horses may be unharnessed and harness and carriages placed convenient to the loading places before its train is spotted. It is desirable that the detail of such guards as are necessary before the arrival of the battery should be made from the cannoneers.

**1760.** As soon as the battery has been unhitched the team should be taken to the vicinity of the place at which the harness is to be loaded and there unharnessed. Each two pairs are held by a cannoneer designated by the chief of section. The remaining cannoneers assist the drivers in unharnessing and securing the harness.

When harness sacks are available the harness of each pair is packed in its sack, plainly marked (**409**). The horse equipments of officers and individually mounted men are placed in sacks or, if sacks are not available, wrapped in saddle blankets, plainly tagged. The horse equipments of officers are placed in the baggage car or, if a separate car is provided, in the car with their mounts. The horse equipments of individually mounted men are placed in the car with the harness.

1761. If harness sacks are not available, grain sacks may be used (409), or a paulin may be used to wrap all the harness pertaining to each carriage. The following method is convenient:

In the description north, south, east, and west refer to the sides of the paulin, as it lies on the ground, and are used merely for convenience, any particular side being designated as north.

Spread paulin on the ground, marks down. Place near swing collar in center of paulin, bearing surfaces up, top north, near wheel and lead collars on right and left of it, bearing surfaces up, tops south. Place saddle blanket of each horse on his collar, folded as when placed on harness peg. Place off collars on blankets, bearing surfaces up, tops in a direction opposite to those of near collars. Place blankets on collars. Place near saddles on blankets, north and south, attachments folded across seats. Place off saddles upside down across near saddles, attachments underneath. Lay bridles between bars of off saddles. Fold near and swing traces and lay them on the pile, lengthwise. Place the neck yoke on the ends of the off blankets on one side of the pile. Fold wheel traces once and place on the other side of the pile.

Fold east and west sides of paulin over ends of pile, then north and south sides. Pass a picket rope around center of bundle, turn it once on itself, then take a turn around each end of the bundle with the free ends; cross these ends over ends of bundle, roll the bundle over, pass the ends of the rope along the other side of the bundle, taking a turn around the binding parts of the rope in passing, and engage the hook in the ring. Or, lay the picket rope on the ground, its center forming a U, the sides of which are about 2 feet apart. Spread the paulin over this and proceed as before. After the bundle is folded, the binding is somewhat simpler than in the first case, but the bundle will be secured by only two turns instead of three and there will be an excess of rope. Tying a knot in such heavy rope is difficult.

The harness having been secured in bundles the cannoneers place them convenient to the loading place. In carrying the bundles care must be taken to hold them clear of the ground.

**1762.** The drivers take the horses to a designated place and secure them. If the stables or permanent picket lines are available they should be secured there and left under the charge of two drivers detailed as guards. Otherwise the horses of each section should be formed in a circle, the halter tie rope of each horse being securely tied to the halter of the horse next to him. In this case each chief of section details a driver to remain with the horses of his section as guard. In either case the horses are given a feed of hay, which should have been withheld from them for some hours before. Whenever practicable they should be watered about one hour before they are loaded.

**1763.** The horses having been unhitched and secured, the battery falls in, each man carrying his haversack or saddle bags, canteen, and slicker. These articles are deposited on the ground and a guard placed over them. The necessary details are made and the loading is started as soon as the cars have been inspected and turned over to the organization.

**1764.** Each train commander should detail an officer to accompany the quartermaster in the latter's inspection of the cars, made after the train is made up and before it is turned over to the troops for loading.

Passenger cars must be clean, fully supplied with water and ice, and sufficiently lighted and heated. Common defects are lack of water, ice, and illumination.

Stock cars must be inspected with special care to see that they are in good order throughout. Common defects are loose boards, rotten flooring, broken fixtures, protruding nails, and filthy condition. These are sources of danger and discomfort to the animals and of loss to the Government. Unsuitable cars should be rejected. In time of peace the commanding officer should not hesitate to suspend the movement until proper cars have been provided. In time of war it is usually necessary to be content with what can be obtained. Such repairs as are practicable should be made, and a report forwarded setting forth the conditions.

Baggage, box, and flat cars are usually in serviceable condition, but should nevertheless be thoroughly inspected.

1765. As soon as the cars have been accepted they are prepared for loading. The officer detailed to load the horses, accompanied by the stable sergeant and one or more of the mechanics, makes a detailed inspection of the stock cars. All projecting nail points are bent and splinters are removed. The breast bars on the doorways opposite the loading platform are examined, put in place, and the doors themselves securely fastened. Such repairs as may be necessary are made with the material available. The cars should be clean and the floors covered with at least 2½ inches of sand or sawdust. In permanent garrisons material for this purpose should be kept on hand.

The brake handles of the flat cars should be removed so that the carriages may be run from one car to another.

1766. Ordinarily a section can be usefully employed in loading a box or baggage car. A noncommissioned officer and about six men should be inside the car to stow the property. The remaining men pass in the packages.

In loading such cars care is taken to place the heaviest articles and those least needed at the bottom. Harness should not be placed in piles deeper than two packages. Individual horse equipments and the bundles of blanket rolls may be stored on top of the harness.

1767. The carriages of a battery on a war footing are conveniently loaded in the following order: On the first car, the first section and one carriage of the fifth; on the second car, the second section and one carriage of the fifth; on the third car, the third section and one carriage of the sixth; on the fourth car, the fourth section and one carriage of the sixth; on the fifth car, the seventh section and the battery wagon and forge; on the sixth car, the eighth section and the store wagon.

In preparing to load, the carriages should be disposed conveniently for following the above sequence.

1768. Ordinarily no attempt is made to load more than one vehicle car at a time. It will be convenient to run the last limbers at least from an empty car to the one being loaded. Frequently the length of the loading platform will be such that several of the cars must be reached by running the carriages across other cars.

**1769.** As a rule two sections may be advantageously used in loading the carriages. The two driver squads bring the carriages in proper sequence to the loading platform convenient to the cars. One gun squad runs the carriages from the platform to the car being loaded; the remaining gun squad places the carriages in the proper position. If the platform is small and its approaches are difficult, additional men must assist the two driver squads.

**1770.** To load the first car when the carriages are run across other cars, proceed as follows:

The drivers run the carriages to the edge of the platform at a convenient car in the following order: First caisson, fifth section; caisson of first section; gun of first section; limber of first caisson, fifth section; limber of first caisson; limber of first gun. Each of these is placed with its trail or pole pointing squarely across the car on which it is first to be placed. The gun squad designated to run the carriages to the car being loaded takes the carriages as they are placed by the drivers. Each caisson and the gun is successively drawn onto the car and its trail turned away from the direction in which it is thereafter to be run. Each is then pushed to the car being loaded, where it is dropped. The pole of each limber is turned in the direction in which it is to be run. Each limber is pulled to the car next the one being loaded. The gun squad designated to place the carriages on the car being loaded takes them as they are delivered and places them in position. The first caisson delivered is placed with the trail pointing toward the middle of the car, the wheels resting about 3 feet from the front end of the car. The next caisson is placed in a similar position, tires squarely against those of the first. The gun carriage is placed with its trail in the same direction as those of the caissons, the wheels so placed that no part of the gun or carriage touches the caisson. The limbers are put on in the order in which they are delivered, the poles pointing in a direction opposite to the trails. The pole of the first limber to be loaded is placed under the right trail seat of the gun, the wheels so that no part of the limber will touch the gun or carriage. Each of the other limbers is placed tire to tire with the limber next before it.

Care is taken that all the wheels are in line so that full-length timbers may be used in checking the wheels against lateral movements.

The other cars are loaded in a similar manner, the store wagon or the battery wagon being placed as prescribed for a gun carriage. In loading the last car it may be necessary, when short cars are furnished, to take out the pole of the last limber. The pole should be replaced as soon as the limber is in place.

**1771.** The vehicles are secured with 2 by 4 inch timbers as follows:

Pieces nailed to the floor of the car on both sides of each wheel prevent transverse motion. These should be as long as practicable.

Pieces in front and rear of each wheel prevent longitudinal motion. These should be 7 feet long and are placed on and nailed to the pieces which lie alongside the wheels.

Pieces placed over the lowest part of the felloes and secured to the timbers which lie alongside the wheels prevent vertical motion. These should be 7 feet long. Small blocks nailed to the side timbers fore and aft of these crosspieces assist in securing them; 7-inch spikes should be used for this purpose.

The limber poles and the caisson trails may be secured by nailing blocks on both sides of each and one across the top near the end. The trail of each piece should be secured by nailing a block on each side of it, one in prolongation of its axis and one across the top near the end. All of these blocks should be 2 feet long and of 2 by 4 inch timber. When time is of importance the blocking of the poles and trails may be omitted without great danger. A spare piece of 2 by 4 inch timber should be secured to each car so that material for repairs may be available en route.

**1772.** The necessary timber and nails are furnished by the quartermaster. The most economical length of timber is 14 or 16 feet.

Whenever possible the proper lengths for crosspieces, blocks, etc., should be cut before the time for loading.

The material necessary for each battery is as follows:

One thousand eight hundred linear feet of 2 by 4 inch timber.

Seventy-five pounds 20-penny (4-inch) nails.

Ten pounds 7-inch nails.

For each three field wagons or reel carts 250 feet of timber and 10 pounds of nails should be allowed.

**1773.** As each flat car is loaded the mechanics nail the securing timbers in place. A gun squad should be detailed to bring the timbers and put them in position for nailing.

In the field, when sufficient lumber can not be obtained, chocks must be improvised from all available material. In such cases additional security is obtained by lashing together the wheels that are placed tire to tire.

**1774.** When ample time is available it may be desirable to remove such articles as paulins, lanterns, etc., from the carriages and carry them properly packed in a box car with other stores.

**1775.** The horses should not be loaded until the loading of all carriages and stores has been completed. Whenever possible the loading pens and chutes to be found at railroad stations should be used. In any case especial care must be taken that the horses have secure footing in passing into the car, and that side rails are provided to prevent their stepping between the car and the platform.

For each car being loaded four selected noncommissioned officers, a mechanic, and a gun squad should be detailed. Two of the noncommissioned officers work inside the car. The remaining noncommissioned officers work at the door of the car. Two of the members of the gun squad collect the halter tie ropes and see that they are turned over to the stable sergeant at the forage car. The remaining cannoneers assist the noncommissioned officers at the doors. When chutes are available all these men except the noncommissioned officers should remain outside the runways until they are needed. When pens and chutes are available the horses are penned by carload lots. A noncommissioned officer and a driver squad are assigned to work in each loading pen. The remaining drivers bring the horses from the holding pens and place a new carload lot in the loading pen as soon as the preceding lot has been loaded. As the horses arrive the drivers in the loading pen remove the halter tie ropes and pass them to the cannoneers detailed to collect them. The gate to the runway is kept closed until the gangplank

is in place, the side gates closed against the gangway, and the noncommissioned officers in place. Everything being in order, the gate is opened and one of the drivers leads a docile horse up the runway. The remaining drivers cause the horses to follow as closely as possible. This is accomplished without shouting or otherwise exciting the animals. Horses that hold back are slapped or gently struck across the rump with a tie rope. The noncommissioned officers inside the car place themselves near the door and keep the horses quiet by speaking to them. When the first horse arrives one of the noncommissioned officers takes him from the driver and leads him to one end of the car. After this the noncommissioned officers confine themselves to keeping the horses quiet and preventing them from leaving the car. Trained horses are thus allowed to pack themselves in the car. It is desirable that as many horses as practicable be placed in each car not provided with separate stalls.

With horses not trained in loading each noncommissioned officer may be assisted in the car by two men whose duty it is to hold the last horse received in place across the car.

The car having been filled, the noncommisioned officers inside the car first put up the breast bar and then leave the car. The gangplank is swung back, the side gates slipped back, and the car door closed. The mechanic fastens the door securely.

**1776.** When loading pens are not available and the horses must be loaded from a platform similar methods are used except that all the horses are led by drivers into the car. The halter tie ropes are taken off after entering the car and turned over to the cannoneers collecting them as the drivers pass out. In leaving the car the drivers must be careful to avoid interfering with horses just entering.

**1777.** When permanent platforms are not avaliable, platforms or ramps must be improvised.

For loading the carriages such platforms or ramps are preferably placed at the end of the cars. For animals the ramp should be well supported, have strong sides, and the bottom provided with cleats to give a secure footing. By taking advantage of shallow cuts and using baled hay, platforms may be readily improvised.

Much time and labor may be saved by carrying material for ramps ready prepared on the cars with the carriages.

**1778.** It is not necessary to wait for an engine each time cars must be spotted during loading or unloading. By uncoupling the cars, and distributing 20 or more men along the sides of those to be moved, two or more cars may readily be shifted. Care must be taken to have men ready to handle the brakes and to give signals in such a way as will cause all the men to work together.

**1779.** The animals having been loaded the men fall in at the place where their equipments were left, secure them, and are marched to the coaches. The assignment of men to particular coaches should have been made beforehand so that the men may enter without delay.

So far as practicable sections are kept together. In each car the senior noncommissioned officer occupies a seat next the door at one end of the car and the next senior, except in the officers' car, a seat next the other door. These noncommissioned officers preserve order and see that no one leaves the car without authority.

The cooks are in the kitchen car or in the car next to the baggage car used as a kitchen. The first sergeant, stable sergeant, supply sergeant, battery clerk, and mechanics are in the car with the officers.

Before entering the train the battery commander cautions the men not to leave the cars without specific orders, that complaints are to be made to him and not to the train crew, and gives such other instructions as may be necessary.

The sleeping-car conductor, or the porters, and the train conductor should be informed as to the orders relative to the introduction of unauthorized articles on the train and requested to impart this information to their subordinates.

**1780.** The train conductor should be requested to notify the battery commander immediately before any halt of 10 minutes or longer is to occur. During such stops an officer, accompanied by the supply and stable sergeants, the chief mechanic and one or more mechanics inspects the stock and flat cars and makes any repairs which may be necessary and practicable.

When the duration of the stop is considerabe sentinels should be posted over the flat cars, unless they have a permanent guard.

**1781.** The animals should be unloaded once each 24 hours for exercise, feeding, and watering.

When the journey is to exceed 24 hours suitable arrangements should be made with the railroad authorities for the stop for feeding. It is desirable that the place for unloading should be selected several hours beforehand, so that proper notice may be given to the station agent and other railroad officials. In order to avoid reloading the animals at night a station should be selected that will be reached at about noon.

**1782.** The necessary requirements for a suitable feeding station are water and a platform or, preferably, chute for taking the animals out of the cars.

Ample stock pens, dry footing, facilities for renewing the bedding in the cars, etc., are also desirable.

**1783.** Before reaching the feeding station the senior noncommissioned officer in each car details a cannoneer to remain in the car as a guard, causes the drivers to get out their grooming kits and cautions the men that their remaining equipment, except pistols, is to be left in the car.

Upon reaching the feeding station the men, except the mess sergeant, the cooks and guards, are notified to leave the cars and fall in at a designated place. Rolls having been called the drivers are formed separately from the cannoneers.

**1784.** Two gun squads are detailed to assist the stable sergeant in preparing the forage. These men are at once marched to the forage car. The stable sergeant, upon reaching the forage car, gives the halter tie ropes to one of the gunners who, assisted by a cannoneer, takes them to the stock cars and distributes them as they are needed. These men are responsible for collecting the tie ropes and turning them over to the stable sergeant when the horses are reloaded.

The stable sergeant causes the remaining men of his detail to put one feed of oats in each feed bag and to distribute one feed of hay at the feeding places.

The feed bags are not taken to the feeding places until the animals have been watered when all the cannoneers assist in

this distribution. No attempt is made to give the horses their own feed bags.

**1785.** The supply sergeant, the chief mechanic, and all the mechanics not engaged in unloading the animals proceed, as soon as the rolls have been called, to the flat cars where they make such repairs as may be necessary. Having completed these repairs the mechanics begin on the stock cars as soon as the latter have been unloaded.

As soon as an officer is available, one is detailed to inspect all this work, to cause any additional repairs that may be necessary to be made, and to superintend the resanding of the cars (**1792**).

**1786.** The drivers, the remaining gun squads, and the necessary mechanics are marched to the unloading place. Four selected noncommissioned officers, a gun squad and one mechanic are detailed for each place where a car is to be unloaded. These men remain at the same chute or platform until all of the cars there have been emptied. Before any car is unloaded sufficient drivers to provide one for each two horses are sent to join the above detail. Each of these drivers secures two halter tie ropes from the men distributing them. The remaining drivers and cannoneers are held in ranks until they are needed.

An officer should be in charge of the unloading of each car.

**1787.** Two of the noncommissioned officers of the above detail are assigned to work inside the car, the others working outside at the door. The cannoneers assist the latter noncommissioned officers and also assist the drivers in catching up the horses. The mechanic removes the fastenings and assists in opening the door.

The principal difficulty in unloading is in preventing the horses from leaving the car before the gangway, gates, or side rails, etc., are in place and in avoiding overcrowding in the doorway.

**1788.** As soon as the car is in place the door is opened enough to permit the noncommissioned officers who work inside to enter. These men at once enter, leaving the breast bar in place, and quiet the horses nearest the door by speaking to and caressing them. Everything being in readiness the door is completely opened and the gangway, gates, etc., put in position as quickly as possible.

If a loading pen is available the drivers and cannoneers assigned to the car go into the pen to catch the horses up after they enter it. If no pen is available the drivers and cannoneers line themselves up on either side of the door, each one taking an animal in turn as he leaves the doorway. All men being in their places the noncommissioned officers inside the car remove the breast bar, and every endeavor is made to make the horses leave the car quietly and in single file.

**1789.** The cannoneers assist the drivers in catching up the horses. As soon as all the animals of the first lot have been caught up the pairs are formed in column and the drivers lead the horses around at a slow walk. A noncommissioned officer should be designated to lead the column of this first lot. As each succeeding car is unloaded and the horses caught up, the drivers join the rear of the column.

**1790.** If ample feeding lots are available a separate lot should be assigned each separate car. In any case no attempt is made to separate the horses by sections, but effort is made to keep together the horses that have been in the same car and to reload them together. Drivers remain with the pairs which they catch up and do not attempt to find their own horses unless the latter are with the same carload to which the driver is assigned. In this case a driver may be allowed to take his own horses after they are tied up for grooming and feeding.

**1791.** The object of walking the horses and of the subsequent grooming is to remove the stiffness and swelling of the legs induced by the long standing in the cars. For this reason the exercise of the horses should be continued for 10 or 15 minutes after the unloading of the last car has been completed.

**1792.** Hay having been distributed and the exercising completed, the horses are properly secured and then groomed while they are eating hay. During the grooming particular attention is paid to cleaning and hand rubbing the legs thoroughly. All kicks, cuts, and abrasions are reported to the stable sergeant, who visits all the horses at this time.

**1793.** During the grooming the cannoneers proceed to the stock cars and renew the sanding if material is available. Tools for this purpose may [illegible] be had from the railroad or stockyard [illegible] from the carriages.

Sometimes it may be necessary to detail a number of cannoneers to draw water for the animals.

**1794.** The grooming is continued until the animals must be watered, which should be in time to allow them to eat their grain before it is necessary to begin reloading.

At the proper time the officer in charge of renewing the sand causes the cannoneers to take the filled feed bags and to distribute them after all the horses have been watered. He then details a gun squad to collect the feed bags and turn them over to the stable sergeant at the forage car after they have been removed from the horses.

**1795.** At least two hours should be allowed for unloading, feeding, and reloading.

In all loading and unloading particular care must be exercised to avoid any shouting or excitement on the part of the men; these are the principal causes of excitement on the part of the horses, which in turn, is the source of most difficulties in handling the animals.

**1796.** Upon arrival at the detraining station complete and early information as to the facilities for unloading and other conditions is essential to the orderly planning and conduct of the detraining. For this purpose each train should be met as it arrives by an officer or officers from preceding organizations.

**1797.** The detraining should ordinarily be so conducted as to release the cars as rapidly as possible and thus avoid congestion in the detraining station. Following this principle, the men take all of their equipment with them upon leaving the coaches; the stock cars are unloaded first, the flat cars next, and finally the baggage cars and the box cars.

**1798.** Upon arrival the noncommissioned officers cause the men to take their equipments, but no one leaves the cars except the officers and the first sergeant until ordered to do so. The necessary plan for unloading having been made, the men are ordered to leave the cars and fall in at a designated place. Rolls having been called, the mess sergeant and the cooks proceed directly to the baggage car containing the kitchen equipment and the rations. The remainder of the battery is marched to a suitable place where the men may leave their equipment. The men having deposited their equipment, a guard is placed,

the necessary details are made, and the work of unloading begun.

**1799.** Whenever practicable, arrangements are made at once for unloading the kitchen equipment and necessary rations for the first meal and for transporting them to a suitable place. Such cannoneers as are necessary are detailed to assist the mess sergeant and cooks in this work. The horses are unloaded as heretofore described, but are arranged by sections as they are unloaded and are secured at once, care being exercised that they are not tied to movable or flimsy structures. The feed bags are not filled but hay is fed at once. Two or more cannoneers are set to work to sort the feed bags out by sections, and later, when the horses are being harnessed, to turn them over to the chiefs of section.

During the unloading of the horses the quartermaster sergeant, the mechanics not assisting at the stock cars, and one gun squad proceed to the flat cars and begin the removal of the chocks preparatory to unloading. As the timbers are removed they are taken to a suitable place and one man is left with them as guard until they are finally disposed of.

**1800.** The horses having been unloaded, secured, and given a feed of hay, work on unloading the carriages is begun. Usually a part of the men may be usefully employed in unloading the baggage and box cars simultaneously with the unloading of the carriages.

**1801.** As the carriages are unloaded they are run to a suitable place and arranged in proper order in park or column convenient for hitching in. A guard is posted over the park as soon as the first carriage is placed.

**1802.** In unloading the harness it is arranged by sections so as to give ample room for harnessing.

**1803.** Ordinarily the battery should harness, hitch in, and clear the vicinity as soon as the horses, carriages, and harness have been unloaded. When the box cars have not been completely unloaded all cannoneers not needed to hold horses during the harnessing may be left at work unloading.

**1804.** While the foregoing methods of loading and unloading outline the principles which should be [illegible] details of the plan adopted must be varied to [illegible] conditions

of each particular case. For example, the facilities for watering may be so limited that it will be necessary to water throughout the stop; or the period of travel may have been so great or the temperature so high that, to prevent suffering watering should commence immediately after unloading.

The first essential is a definite plan, conformable to existing conditions, and its methodical execution without excitement or undue haste.

### Section 10. Transportation by Water.

**1805.** At sea, transportation of troops is effected by the Army Transport Service.

The necessary preliminaries before embarking, the routine details on board transports, and methods of disembarking are prescribed in the Army Transport Service Regulations, a copy of which should be secured by the commander of each organization designated for over-sea service.

**1806.** For over-sea transportation Artillery carriages should generally be knocked down; wheels removed and guns dismounted. Fuze setters and all implements, equipments, and wheel fastenings should be removed from the carriages and boxed. Harness and horse equipments, except such as are needed for use during the trip, will be boxed and marked to show the section to which they belong. For expeditions into the theater of operations it may be desirable not to dismount the guns or remove the wheels.

## CHAPTER II.

# MARCHING AND CAMPING.

### Section 1. Breaking Camp and Preparation for a March.

THE EVENING BEFORE THE MARCH.

When a command learns that it is to make a march on the following day, presumably starting early in the morning, certain details should be attended to the evening before.

All men should fill their canteens, as there will probably be no time for this in the morning.

The mess sergeant should find out whether lunch or the reserve ration will be carried on the march and should attend to these details in the evening in order that the issue can be made promptly in the morning.

The commander of the guard should be given a memorandum as to what time to awaken the cooks and where their tent is. The member of the guard who does this should awaken them without noise, so as not to disturb the rest of the remainder of the command.

The cooks should be instructed as to what time breakfast is to be served and what time to awaken the first sergeant.

The cooks or cooks' police must cut and split all firewood for the morning before 9 p. m. There must be no chopping, talking, or rattling of pans before reveille which will disturb the rest of the command. This applies to every morning in camp.

If in permanent or semipermanent camp, and feed boxes are provided for the animals, the grain ration should be put in the grain bags and the latter in the feed bags, prepared for packing on the saddles in the morning. Also, in such a camp, if the extra blanket is not required for cover the rolls may be made up and ready.

If the command is marching from day to day, or in the field, the feed bags will be filled for the morning feed after the animals have finished their evening meal of grain. This will be done, under the supervision of the stable sergeant or stable orderly, by a detail of one or two cannoneers from each section. The filled bags may be piled on the front-rank carriages of each section under the paulins, or kept in the shelter tents. Also, at this time the noon feed for next day will be put in the grain bags. These will be kept in the tents of the drivers and individually mounted men.

The buglers look after these details for the officers, and the guidon for the first sergeant.

### THE MORNING OF THE MARCH.

Cooks arise when called by the guard and start the preparation of breakfast without noise. The first sergeant is usually awakened by one of the cooks about half an hour before reveille, in order that he may complete his toilet and breakfast early and be able to devote all his time to supervising the details of the morning's work. If the officers desire to be awakened before reveille, they will notify the first sergeant accordingly.

At first call the men turn out, perform their toilets, strike their shelter tents (unless it has been directed to await the sounding of the general for this), and make up their rolls.

At the sounding of assembly, immediately after reveille, each man must be in his proper place in ranks. This assembly is under arms. The first sergeant commands "Call rolls" at the last note of assembly.

After he has reported to the officer of the day, the first sergeant commands: "Fall out. Get your feed bags and stand to heel." The drivers and individually mounted men then get their feed bags and stand facing toward the picket line, 1 yard in rear of their horses. The first sergeant then commands, "Feed." Each chief of section verifies his animals, supervises the feeding of his section, taking care that the feed bags are properly put on, details one man to remain and take off the bags as soon as the horses have finished, then reports to the first sergeant, "First (or such) section fed." After all the chiefs of

section have reported, the first sergeant commands, "Fall out." The men then get their mess outfits and go to the kitchen for breakfast. The men detailed to watch the horses remove the feed bags from each animal as soon as he has finished, gather the bags together, and take them to the tents of their respective chiefs of section. They then eat their own breakfast.

Immediately after breakfast each man will wash his mess kit in the hot water provided for that purpose at the kitchen and will at once pack the mess kit in his haversack or saddlebags.

The cooks will provide hot water for washing mess kits at the same time that breakfast is served.

The men will be allowed 10 or 15 minutes after breakfast in which to relieve themselves. During this time the drivers and individually mounted men get their feed bags, put their grain bags inside, and fasten them to the rolls or make them ready for packing. The first sergeant then (or at the sounding of "Boots and saddles") forms the battery. (See extract, par. 489.) The men fall in, carrying their equipment. After the squads have been sent to the picket line and park, the work of breaking camp and getting ready for the march proceeds about as follows:

The horses are watered and then tied to the wheel for grooming and harnessing. After harnessing is finished, rolls and feed bags are packed and the teams hooked and hitched. While this is going on the cannoneers, having placed their rolls and haversacks on the ground, those of each squad in rear of its rear-rank carriage, well out of the way, are divided for work somewhat as follows:

The gunner and No. 4 of each squad take down the picket lines, strap them in place, and put the carriages in order under the supervision of the chief mechanic.

One squad assists the stable sergeant in loading forage, if necessary.

One squad assists the cooks in packing the kitchen.

One squad strikes and folds the officers' tents and brings them to the kitchen, if heavy tentage is used.

One squad fills in the sink. The sink should not be filled in earlier than is absolutely necessary.

Two squads police the camp within the battery police limits.

Two squads are available for possible details from regimental and battalion headquarters.

Officers and first sergeant supervise the work.

A permanent assignment of squads to these duties lightens the labor and decreases the time necessary for breaking camp. After the breaking of camp all the cannoneers are used to police camp.

All this work should be done by the time the teams are harnessed. The cannoneers then strap their rolls in place and put on their haversacks. The senior gunner then posts them at their carriages.

Men should not start from camp thirsty, but should drink all the water they want immediately after breakfast. All canteens should be filled before marching, one man in each squad being detailed to fill the canteens for his squad.

### Section 2. Marching.

The principal work of troops in the field consists of marching. Battles take place only at indefinite intervals, but marches are of daily occurrence. It is only by good marching that troops can arrive at a given point at a given time and in good condition for battle.

The rate of march depends greatly upon the condition of the roads and the weather, but the average rate for Field Artillery is about 3½ miles per hour. This allows for a rest of 10 minutes each hour. The total distance marched in a day depends not only on the rate of march, but upon the size of the command, large commands often covering only about 10 miles a day, while small commands easily cover double that distance.

In order to make the march with the greatest comfort and the least danger, it is necessary that each unit be kept well in hand. Each man is permitted and encouraged to make himself as comfortable as possible at all times, excepting only that he must not interfere with the comfort of others or with the march of the column.

Under no circumstances will any man leave the column without permission from his battery or higher commander. If the absence is to be for more than a short while, he must be given

a pass showing his name, rank, and organization, and the reason he is permitted to be absent. If sick, it is better to wait by the roadside at some comfortable place for the arrival of the surgeon or the ambulance. In any case, the soldier keeps his arms and equipment with him, if possible. Soldiers absent from their organization without a pass will be arrested and returned to their command for punishment.

Marches in hot weather are particularly trying. Green leaves or a damp cloth carried in the hat lessens the chance of sunstroke. The hat should have ventilators, and when not exposed to the direct rays of the sun it should be removed from the head. It is well to keep the clothing about the neck and throat open, and sometimes to turn up the shirt sleeves so as to leave the wrists free.

The canteen should always be filled before starting out. Use the water very sparingly. None at all should be drunk during the first three or four hours of the march. After that take only a few mouthfuls at a time and wash out the mouth and throat. Except possibly in very hot weather, one canteen of water should last for the entire day's march. Excessive water drinking on the march will play a man out very quickly. Old soldiers never drink when marching. A small pebble carried in the mouth keeps it moist and therefore reduces thirst. Or a small piece of chocolate may occasionally be eaten. Smoking is very depressing during a march.

Canteens will not be refilled on the march without authority from an officer, as the clearest water, whether from a well, spring, or running stream, may be very impure and the source of many camp diseases. If canteens are to be refilled, it should be done by order, and a detail is generally made for this purpose.

Entering upon private property without permission, or stealing fruit, etc., from gardens and orchards, is a serious military offense, as well as a violation of the civil laws.

When a cooked meal is carried, it should not be eaten until the proper time.

A command ordinarily marches for 50 minutes and halts for 10 minutes. The first halt in a day's march is for about 15 minutes, is made after about 30 minutes' marching, and is for the express purpose of allowing the men to relieve themselves,

and for adjustment of harness and packs. Men who wish to relieve themselves should attend to it at once and not wait until the command is almost ready to march again.

At every halt get all the rest possible and don't spend the time wandering around or standing about. Only green recruits do this. If the ground is dry, stretch out at full length, removing the belt, and get in as comfortable a position as possible. The next best way is to sit down with a good back rest against a tree or a fence or some other object. Never sit down or lie down, however, on wet or damp ground. Sit on anything that is dry. At a halt it is very refreshing to adjust the underclothing.

Draft animals require particular care on a march, and they bear the same relation to the marching ability of an artillery command as do the care of the feet and adjustment of packs in an infantry organization. Care of animals in the field and on the march and adjustment of harness are described in detail elsewhere in this Manual. Not only must the officers and noncommissioned officers be thoroughly familiar with those principles and rules, but the drivers must be taught the practical rules for the care of their mounts and pairs.

### Section 3. Making Camp.

On reaching the camp site the men should not be allowed to fall out and rest until the animals and matériel have been put away and the shelter tents pitched. The men will not be allowed to relieve themselves until sinks are dug. Temporary sinks may be dug with intrenching tool if carried. A guard should be placed over the water supply at once. As soon as the battery is parked the work of making camp proceeds about as follows:

The battery commander directs the first sergeant: "Take charge of the battery." As soon as he has given the necessary commands for unlimbering and unharnessing the first sergeant directs that the picket lines be pitched, using for this work all the animals. The picket lines are usually stretched between the rear-rank carriages (the caissons), beginning with the right flank. The first rope is secured at one end to the

exterior wheel of the flank carriage, then a turn is taken around the opposite wheel. The next rope is then fastened to this and stretched to the next carriage, where a turn is taken around the first wheel reached, then a turn around the opposite wheel. Cannoneers then heave on the rope between the two carriages while other cannoneers raise the farther wheel of the second carriage. When the rope is sufficiently taut the wheel is lowered so as to stretch the line still more, the end of the rope being held to prevent it from slipping. Then the next rope is attached and this process continued until all have been put up.

The cannoneers then unstrap their rolls from the carriages and place rolls and haversacks in section piles 20 yards in rear of their rear-rank carriage. The cannoneers may then be divided for other work somewhat after the following scheme:

One squad helps arrange the kitchen.

One squad pitches the officers' tents, if heavy tentage is used.

One squad digs the sink.

One squad procures wood and water.

One squad is held available for details from regimental headquarters.

The sinks are located by the commanding officer. The detail to dig them should wait until informed of the location. An officer should inspect the sink as soon as the detail reports it as completed.

The details called for by regimental headquarters for pitching the headquarters camp for the quartermaster, etc., should be reported to the adjutant without delay.

Unless lunch has been carried or cooked during the march, the cooks should get to work on a hot meal as soon as possible. The kitchen police report at the kitchen as soon as their tent is pitched. Wood and water will be required at once.

Each chief of section details a cannoneer to fetch a bucket of water for the use of the drivers and individually mounted men in cleaning their bits and collars. After the drivers have unharnessed and placed their harness on the poles, the horses are tied on the line and their backs and legs are rubbed dry. If the backs under the blankets are very wet and the sun is hot or a cold wind blowing, the blankets should be left on for a time. The drivers then proceed to clean their bits and collars, and

remain with their harness until it has been inspected. The chief of section then directs that the harness be covered with a paulin.

By the time this work is finished the cannoneers should have completed their assigned tasks, and the battery is formed for pitching the shelter tents. If the cannoneers have not completed their work, they may be assembled later for pitching their tents.

After all tents have been pitched and equipment arranged, the men should be left free to rest until the afternoon meal, or until stable call. If the meal is to be late, the animals should be cared for before that time, so that the men may rest after supper. At stable call the battery is formed, cannoneers are detailed to replace absent drivers, others are detailed to break open the bales of hay and distribute it. to restretch the picket lines, if necessary, while the animals are being watered, to refill the feed bags, and for any other work that can be done during stables. During this hour all the battery officers should be present to supervise the work and look over the animals. The stable sergeant or veterinarian attends to all animals needing attention, and the horseshoers to animals needing reshoeing. The animals are watered by the men charged with their care, under the supervision of an officer. If the watering place is at a considerable distance, the drivers may ride one of their horses and lead the other, and individually mounted men may ride theirs. This is usually done bareback, but bridles should always be used on all horses, as otherwise they probably will break away.

If poor facilities exist for watering, this should be done a section, or even a pair, at a time. In no case must this be hurried. If the watering place is boggy or in sluggish water, care must be taken not to roil the water; if necessary, allow time for the water to run clear after the preceding section has finished. Horses will not drink muddy or ill-smelling water. Keep the animals that have been watered near by until the others of the section or other unit have finished. otherwise those last to reach the water will not drink enough for fear of being left behind when their team mates are taken away. Bear in mind that the horse is one of the most gregarious of animals.

After returning from watering, the animals are tied on the picket line and fed. Grooming takes place while they are eating. A small amount of hay may be given before the grain to take off the edge of their hunger. This is also a good thing to do if a considerable interval is to elapse between making camp and the afternoon feed of grain.

During this hour the gunner and No. 4 of each section, under the supervision of the chief mechanic, look over the carriages, oil the parts needing it, and making any repairs necessary.

After all the work has been done at stables and park, the men are left free for rest and such recreation as the camp affords until retreat or tattoo.

In a battery there is always work to do, and by having the whole personnel work together the necessary routine may be done with system and dispatch. Nothing is more conducive to discontent and grumbling than to have the cannoneers loafing in their tents or elsewhere while the drivers, whose lots are hard at best, are caring for the animals that are to save those very cannoneers many weary muscles and aching bones the coming day.

After the camp has been put in order, the first sergeant makes the details from roster for kitchen and stable police and non-commissioned officer in charge of quarters for the next day, and for such guard as may be ordered for that day.

### Section 4. Camp Service and Duties.

In camp "Reveille" is preceded by "First call," and a march played by the band or field music, and is followed immediately by "Assembly." If there is a reveille gun, it is fired at the first note of the march and is the signal for all to rise. The roll is called at the last notes of assembly after reveille. At this formation men should fall in in the proper uniform—pistol and belt, service hat, olive-drab flannel shirt, service breeches, leggings, and shoes. The regimental commander may prescribe that coats are to be worn and will prescribe the exact uniform for all drills, parades, and other formations, as well as for men going on pass.

Immediately after reveille roll call the sergeant next in rank to the first sergeant takes command of the battery and deploys it for a general police of the camp within the limits assigned to the battery. Men pick up all scraps of paper and rubbish of all kinds, depositing it in the incinerator or place designated for the purpose. The police limits of each battery are usually designated as extending from head to rear of camp within the space occupied by the battery street, gun park and picket lines, including the ground occupied by the tents, no unassigned space being left between batteries.

Immediately after breakfast men police their tents and raise walls of same. If the day is fair, all bedding should be spread on the guy ropes of the tents for several hours' airing.

At sick call all men who are sick fall in and are marched to the regimental infirmary, under charge of the noncommissioned officer in charge of quarters. The noncommissioned officer takes with him the battery sick report previously filled in and signed by the battery commander. The surgeon examines all those reporting and indicates their status on the sick report. This status may be "Duty" (available for all duty), "Quarters" (patient to remain in tent or battery street), and "Hospital" (patient to be sent to the hospital). The noncommissioned officer then returns to the battery with all the men not marked "Hospital" and hands the sick report to the first sergeant.

At "Boots and Saddles" the battery prepares for drill and is formed by the first sergeant. All men are required to attend drill except those excused by sick report and those specially excused from headquarters. The excused list should include in each battery only the mess sergeant, the two cooks, one kitchen police, two stable police, and men or guard. During drill hours the guard to be excused should be limited to a small patrol to guard against fire and thieves in camp.

If the bedding has been aired, it should be taken in immediately after drill and placed in the tents neatly folded.

Some time during the morning, at a time designated by him, the battery commander inspects the entire battery camp. At this inspection the entire street should be policed, kitchen in order, and tents policed, as follows:

In permanent camp, when pyramidal, conical, or wall tents are used: Bedding folded neatly and placed on the head of the cot. (If bed sacks are used, they will be folded in three folds and the bedding placed on top.) Hats on top of bedding. Shoes under foot of cot. Surplus kit bag at side of squad leader's cot. Equipment suspended neatly from a frame arranged around the tent pole. Rifles in rack constructed around the tent pole.

In shelter-tent camp: Bedding neatly folded and placed at rear of tent, ponchos underneath. Equipment arranged on the bedding. Rifles laid on bedding except when used as tent poles.

The regimental commander prescribes the exact scheme to be followed in the police of tents.

Should there be no parade, retreat roll call is held at the same hour. This roll call is under arms and is supervised by an officer of the battery. After the roll call and at the sounding of "Retreat," the officer brings the battery to parade rest and keeps it in this position during the sounding of this call. At the first note of the National Anthem or "To the Color" the battery is brought to attention and so stands until the end of the playing. The officer then reports the result of the roll call to the adjutant or officer of the day, returns to the battery, inspects the arms, and dismisses it.

At the sounding of "Call to quarters" all men will repair to their battery street.

After taps has sounded all talking must cease and all lights must be extinguished, and so remain until first call for reveille.

In camp all enlisted men are prohibited from crossing the officers' street, or from visiting officers' tents unless actually engaged in some duty requiring them to do so, or sent for by an officer.

Men are not allowed to leave camp without a pass signed by the battery commander and countersigned by the regimental adjutant. The first sergeant is sometimes allowed to give men permission to leave camp from retreat to taps.

The noncommissioned officer in charge of quarters, detailed for 24 hours goes on duty each day at reveille. He is responsible that the grounds around the battery are kept in proper

police; that no loud noise, disturbance, or disorder occurs in the battery street; that men confined to the battery street do not leave the same without proper authority. He reports men who are sick to the surgeon. He may be required to report all other details called for. He accompanies the captain in his daily inspection of the battery. He will not leave the battery street during his tour of duty except as provided above.

One or two privates are detailed daily as kitchen police. They go on duty at reveille. It is their duty to assist the cooks in the kitchin. They assist in the prepartion of meals, wait on the table, wash dishes, procure water and wood, chop firewood, and keep the kitchen, mess tent, and surrounding ground policed. They are under the orders of the mess sergeant and the cooks.

Rifles need careful attention in camp. They should be cleaned and oiled daily, preferably just before retreat or parade. It is advisable for each man to have a canvas cover to keep off the dust and dampness. In a shelter-tent camp tie the rifle, muzzle up, to the pole of the tent, placing a chip of wood under the butt plate and an oily rag over (never inside) the muzzle.

Wet shoes should be filled with oats or dry sand, and set in a cool place to dry. Never dry them by a fire.

Uniforms need special care, as camp service is very hard on them. In a permanent camp every man should have two pair of breeches. The coat will seldom be worm except at parade or retreat. One pair of breeches and the coat should be kept neat, clean, and pressed for use on ceremonies, inspections, and when going on pass. Woolen uniforms may be cleaned and freed from spots by rubbing with a flannel rag saturated with gasoline. Cotton uniforms may be washed with water, soap, and a scrubbing brush, wrung out, and stretched, properly creased, on a flat wood surface in the sun to dry. Leggings can be similarly washed. Hats should be cleaned with gasoline, and dampened and ironed to restore their shape.

Enlisted men should be very careful to observe all the sanitary regulations of the camp. Flies are the greatest spreaders of camp disease. All fecal matter and food should be carefully guarded from them. In camps extreme precautions are taken to screen the sinks and kitchens from flies, and all en-

listed men should cooperate in the effort to make these precautions successful. One fly carrying germs on his feet from the sinks to the food can start a serious and fatal epidemic in a camp. Defecating on the ground in the vicinity of camp or urinating in camp are extremely dangerous to the health of the command, and are serious military offenses. At night a urinal can is provided in each battery street.

In a permanent camp cots or bed sacks are usually provided for the men to sleep on. In a shelter tent camp beds should be made of hay, grass, leaves, pine or spruce boughs, or pine needles, on top of which the poncho and blanket are spread, thus softening the ground and keeping the sleeper away from the cold and dampness. Neglect to prepare the bed when sleeping without cot or bed sack means a loss of sleep, and may lead to colds, bowel disorders, and rheumatism.

In wet weather tents should be ditched, and in windy or cold weather dirt may be banked around them. A place for washing the person and clothes should be arranged for in each battery street. and the waste water disposed of by means of drainage or rock-filled pits. In dry weather the streets in camp should frequently be sprinkled with water to keep down the dust. This is specially neeessary around the kitchen.

### Section 5. Extracts from Drill and Service Regulations for Field Artillery, relative to Camping.

[Paragraph numbers refer to Drill and Service Regulations for Field Artillery.]

**1839.** Each battery ordinarily parks in line. The shelter tents of the men are in two lines, facing each other, with a street of 10 yards, the front line being about 10 yards in rear of the line of caissons. The tents may also be pitched facing a flank **(1856).**

**1840.** Whenever practicable the intervals between sections in the park should not be reduced. A minimum of 40 yards by 200 yards is thus necessary for the shelter-tent camp and park. When the available ground is more restricted or when the weather is good shelter tents need not be pitched, the men sheltering themselves under the paulins covering the carriages or harness.

### WATER SUPPLY.

**1841.** Immediately on making camp a guard should be placed over the water supply. If the water be obtained from a stream, places should be designated, beginning upstream, (1) for drinking and cooking, (2) for watering animals, (3) for bathing and washing clothing.

If the stream be small, the water supply may be increased by building a dam. Small springs may be dug out and each lined with a gabion, or a barrel or box with both ends removed, or with stones, the space between the lining and the earth being filled with puddled clay. A rim of clay should be built to keep out surface drainage. The same method may be used near swamps, streams, or lakes to increase or clarify the water supply.

**1842.** Water that is not known to be pure should be boiled 20 minutes; it should then be cooled and aerated by being poured repeatedly from one clean contained to another, or it may be purified by approved apparatus supplied for the purpose.

**1843.** Arrangements should be made for men to draw water from the authorized receptacles by means of a faucet. The dipping of water from the receptacles or the use of a common drinking cup should be prohibited.

**1844.** On the march, including camps, the daily requirements of water may be estimated at 6 gallons per man or 10 gallons per horse. In permanent or semipermanent camps the supply should be sufficient to provide from 25 to 30 gallons per man and 15 gallons per horse per day. This supply should be properly piped and delivered at convenient places in each organization camp.

### KITCHEN.

**1845.** Camp kettles are hung on irons or on a support consisting of a green pole lying in the crotches of two upright posts of the same character.

A narrow trench for the fire, about 1 foot deep under the pole, protects the fire from the wind and saves fuel. A still greater economy of fuel can be effected by digging a similar trench in the direction of the wind and slightly narrower than

the diameter of the kettles. The kettles are then placed on the trench and the space over it and between the kettles filled in with stones, clay, etc., leaving the flue running beneath the kettles. The draft can be improved by building a chimney of stones, clay, etc., at the leeward end of the flue.

Four such trenches radiating from a common central chimney will give one flue for use whatever may be the direction of the wind.

A slight slope in the flue, from the chimney down, provides for drainage and improves the draft.

**1846.** The lack of portable ovens can be met by ovens constructed of stone and covered with earth to retain the heat. If no stone is available, an empty barrel, with one head out, is laid on its side and covered with wet clay to a depth of 6 or more inches, and then with a layer of dry earth equally thick. A flue is constructed with clay above the closed end of the barrel, which is then burned out with a hot fire. This leaves a baked clay covering for the oven.

A recess can be similarly constructed with boards or even brushwood, supported on a horizontal pole resting on upright posts, covered and burnt out as in the case of the barrel.

When clay banks are available, an oven may be excavated therein and used at once.

To bake in such ovens, first heat them, and then close flues and ends.

**1847.** Food must be protected from flies, dust, and sun. Facilities must be provided for cleaning and scalding the mess equipment of the men. Kitchens and the ground around them must be kept scrupulously clean.

**1848.** Solid refuse should be promptly burned, either in the kitchen fire or in an improvised crematory.

**1849.** In temporary camps, if the soil is porous, liquid refuse from the kitchens may be strained through sacking into seepage pits dug near the kitchen. Boards or poles, covered with brush or grass and a layer of earth may be used to prevent the access of flies. The strainer should also be protected from flies. Pits of this kind in clay soil will not operate successfully. All pits should be filled with earth when the camp is abandoned.

### DISPOSAL OF EXCRETA.

**1850.** Immediately on arriving in camp sinks should be dug. This is a matter of fundamental sanitary importance, since the most serious epidemics of camp diseases are spread from human excreta.

One sink is usually provided for each battery and one for the office of each battalion. Those for the men are invariably located on the side of camp opposite the kitchens. All sinks should be so placed that they can not pollute the water supply or camp site as a result of drainage or overflow. To insure this, their localities and their distance from camp may be varied.

**1851.** When camp is made for a single night, shallow trenches, 12 inches deep and 15 to 18 inches wide, which the men may straddle, will suffice.

In camps of longer duration, and when it is not possible to provide latrine boxes, as for permanent camps, deeper trenches should be dug. These may be used as straddle trenches or a seat and back rest improvised from poles or other available material. They should be screened by brush, condemned canvas, or other material. When open trenches are used, special care must be taken to insure that all excreta is covered with earth, lime, or ashes as soon as it is deposited.

**1852.** In permanent or semipermanent camps special sanitary facilities for the disposal of disinfection of excreta will ordinarily be provided. When trenches are used in such camps they should be at least 6 feet deep and 12 feet long and not more than 2 feet wide. Seats are walled to the ground and provided with lids to keep flies from reaching the deposits; urinal troughs discharging into the trenches are provided. Each day the latrine boxes are thoroughly cleaned, outside by scrubbing and inside by applying when necessary a coat of crude oil or whitewash. The pit is burned out daily with approximately 1 gallon of crude oil and 15 pounds straw. When filled to within 2 feet of the surface, such latrines are discarded, filled with earth, and their position marked.

In permanent camps urine tubs should be placed in the battery streets at nightfall; they are emptied after reveille. Their location should be plainly marked and thoroughly and frequently disinfected.

TENT PITCHING—SHELTER TENTS.

**1856.** When shelter tents are to be pitched the first sergeant, after the horses have been unharnessed, properly secured and cared for, and the guard having been sent to its post, gives the command: **In two lines (or In column facing to the right (left) form for shelter tents.** Then men, carrying their blanket rolls, saddlebags, canteens, and haversacks, proceed to the rear of the rear carriage of their sections. Each chief of section causes his section to fall in in column of squads, the driver squad in front, with a distance of about 10 yards between the squads. The squads of each section face the park if the command be **In two lines.** All the squads face in the designated direction if the command be **In column facing to the right (left).** In either case 10 yards open space is left in rear of the rear line of carriages.

**1857.** Each chief of section arranges for pairing odd men in his squads as far as practicable. If, after this has been done, any man in the section, including the chief of section, remains unpaired the first sergeant is notified. Having arranged pairs between the men left over in the several sections the first sergeant reports the battery formed, and with the guidon, with whom the sergeant pitches, takes his place to the right of the leading squad of the first section. The first sergeant having reported, the officer in charge causes the battery to take intervals as prescribed in The Squad. The men of each squad take intervals, but no attempt is made to close the squads to the right or left. As each man faces to the front he places his blanket roll and other equipment on the ground.

**1858.** The officer aligns the men and commands: **Pitch tents.** The men open their blanket rolls and take out the shelter half, poles and pins; the front man places one pin in the ground at the point where his right heel, kept in position until this time, was planted. Each then spreads his shelter half, triangle to the rear, flat upon the ground the tent is to occupy, rear man's half on the right. The halves are then buttoned together. Each front man joins his pole, inserts the top in the eyes of the halves, and holds the pole upright beside the pin placed in the ground; his rear rank man, using the pin in front, pi-

the front corners of the tent on the line of pins, stretching the canvas taut; he then inserts a pin in the eye of the rope and drives the pin at such distance in front of the pole as to hold the rope taut. Both then go to the rear of the tent; the rear rank man adjusts the pole and the front rank man drives the pins. The rest of the pins are then driven by both men, the rear rank man working on the right.

As soon as the tent is pitched each man arranges the contents of the blanket roll in the tent and stands at attention in front of his own half on line with the front guy rope pin.

The guy ropes, to have a uniform slope when the shelter tents are pitched, should all be of the same length.

**1859.** The guard pitches tents at its post. The cooks' tents are usually pitched at the kitchen.

### TO STRIKE SHELTER TENTS.

**1860.** The men standing in front of their tents: **Strike tents.** Equipments are removed from the tents; the tents are lowered, rolls made up, equipments slung, and the men stand at attention in the places originally occupied after taking intervals.

### TO PITCH HEAVY TENTAGE.

**1861.** The heavy tentage of batteries is usually pitched in two lines, the distance between the lines being about 50 feet for pyramidal tents. The office tent is pitched in the front line at the end next to the line of officers' tents. The first sergeant and the battery clerk are usually assigned to this tent. The tent in the rear line in rear of the office tent is assigned to the battery commander's detail, etc. The remaining tents are assigned two to each section. The chiefs of section and the driver squads occupy the front line, the gun squads the second line.

**1862.** To pitch all types of army tents, except shelter tents: Mark each line of tents by driving a wall pin at the spot to be occupied by the right (left) corner of each tent. For pyramidal tents the interval between adjacent pins should be about 30 feet, which will give a passage of 2 feet between tents. If the rod is used, spread it on the ground where the center of the

tent is to be. Spread the tent on the ground to be occupied, door to the front, and place the right (left) front wall loop over the pin. The door (or doors, if more than one) being fastened and held together at the bottom, the left (right) corner wall loop is carried to the left (right) as far as it will go and a wall pin driven through it, the pin being placed in the line with the right (left) corner pins already driven. At the same time the rear corner wall loops are pulled to the rear and outward so that the rear and side walls of the tent are stretched. Wall pins are then driven through these loops directly in rear of the corresponding front corner pins, making a rectangle. Unless the canvas be wet, a small amount of slack should be allowed before the corner pins are driven. According to the size of the tent, one or two men, crawling under the tent if necessary, fit each pole or ridge or upright into the ring or ridge-pole holes, and such accessories as hood, fly, and brace ropes are adjusted. If a tripod be used an additional man will go under the tent to adjust it. The tent, steadied by the remaining men, one at each corner guy rope, will then be raised. If the tent is of the ward or storage type, corner poles will now be placed at the four corners. The four corner guy ropes are then placed over the lower notches of the large pins driven in prolongation of the diagonals at such distance as to hold the walls and ends of the tent vertical and smooth when the guy ropes are drawn taut. A wall pin is then driven through each remaining wall loop and a large pin for each guy rope is driven in line with the corner guy pins already driven. The guy ropes of the tent are placed over the lower notches, while the guy ropes of the fly are placed over the upper notches, and are then drawn taut. Brace ropes, when used, are then secured to stakes or pins suitably placed.

### TO STRIKE HEAVY TENTAGE.

**1863. Strike tents.**—The men first remove all pins except those of the four corner guy ropes. The pins are neatly piled or placed in their receptacle.

One man holds each guy and when the ground is clear the tent is lowered, and folded or rolled and tied, the poles or tripod and poles fastened together, and the remaining pins collected.

TO FOLD TENTS.

**1864. Common, wall, hospital, and storage tents.**—Spread the tent flat on the ground, folded at the ridge so that bottoms of side walls are even, ends of tent forming triangles to the right and left; fold the triangular ends of the tent in toward the middle, making it rectangular in shape; fold the top over about 9 inches; fold the tent in two by carrying the top fold over clear to the foot; fold again in two from the top to the foot; throw all guys on tent except the second from each end; fold the ends in so as to cover about two-thirds of the second widths of canvas; fold the left end over to meet the turned-in edge of the right end, then fold the right end over the top, completing the bundle; tie with the two exposed guys.

**Pyramidal tent.**—The tent is thrown toward the rear and the back wall and roof canvas pulled out smooth. This may be most easily accomplished by leaving the rear-corner wall pins in the ground with the wall loops attached, one man at each rear-corner guy, and one holding the square iron in a perpendicular position and pulling the canvas to its limit away from the former front of the tent. This leaves the three remaining sides of the tent on top of the rear side, with the door side in the middle.

Now carry the right-front corner over and lay it on the left-rear corner. Pull all canvas smooth, throw guys toward square iron, and pull bottom edges even. Then take the right-front corner and return to the right, covering the right-rear corner. This folds the right side of the tent on itself, with the crease in the middle and under the front side of the tent.

Next carry the left-front corner to the right and back as described above; this when completed will leave the front and rear sides of the tent lying smooth and flat and the two side walls folded inward, each on itself.

Place the hood in the square iron which has been forced downward toward the bottom of the tent, and continue to fold around the square iron as a core, pressing all folds down flat and smooth and parallel with the bottom of the tent. If each fold is compactly made and the canvas kept smooth, the last fold will exactly cover the lower edge of the canvas. Lay all

exposed guys along the folded canvas except the two on the center width, which should be pulled out and away from bottom edge to their extreme length for tying. Now, beginning at one end, fold toward the center on the first seam (that joining the first and second widths) and fold again toward the center so that the already folded canvas will come to within about 3 inches of the middle width. Then fold over to the opposite edge of middle width of canvas. Then begin folding from opposite end, folding the first width in half; then, making a second fold to come within about 4 or 5 inches of that already folded, turn this fold entirely over that already folded. Take the exposed guys and draw them taut across each other, turn bundle over on the under guy, cross guys on top of bundle, drawing tight. Turn bundle over on the crossed guys and tie lengthwise.

When properly tied and pressed together this will make a package 11 by 23 by 34 inches, requiring about 8,853 cubic inches to store or pack.

Stencil the organization designation on the lower half of the middle width of canvas in the back wall.

**Section 6. Suggested Method of Displaying Personal, Horse, and Other Equipment for Field Inspection when Shelter Tent Camp is Pitched.**

For field inspection when shelter tents are pitched equipment may be arranged as follows:

**Blanket,** folded twice into a square (folded across the longer sides each time), is laid in the owner's half of the tent, double fold to the front and single folds to the right, the front edge in line with the front of the tent.

**Equipment and clothing** are displayed on the blanket in three lines parallel to the side of the tent and from front to rear as follows:

FIRST LINE (ALONG RIGHT SIDE OF BLANKET).

**Meat can,** handle folded.

**Meat-can cover,** with **cup** containing **knife, fork, and spoon,** handles down, on the meat-can cover. If model 1911 cup is used, handle will be opened out.

**Canteen and cover**, side by side, canteen on the right, bottoms to the front and stencil exposed.

**Bacon and condiment cans**, tops removed, and in rear of cans, bacon can in front; for **drivers** and **individually mounted men** **ration bags** take the place of condiment cans. If **reserve rations** are carried by the men they will be displayed in their proper receptacles; condiment can tops not removed; ration bags securely tied; **bread** in cartons in rear of the other components of the ration (the bacon must be cut in 2-pound piece and not sliced).

SECOND (CENTER) LINE.

**Towel**, folded, with **comb**, **soap**, and **toothbrush** laid on same, in that order from front to rear.

**Undershirt**, folded, with **stockings** unrolled and laid on same, feet displayed.

**Drawers**, folded.

**Slicker**, neatly folded so as to display the stencil and placed on the ground in rear.

THIRD LINE (ALONG LEFT EDGE OF BLANKET).

**Haversack**, opened out to show both halves, stencil on haversack toward the front, or **saddlebags** opened out to show both halves, flaps turned toward each other.

**Grooming kit**, on folded flaps, **currycomb** in front, teeth and bristles up.

**Surcingles**, folded twice, buckles and straps to the front, stencil displayed, and placed one on each side of the grooming kit. In case of individually mounted men, the surcingle will be placed on the left of the grooming kit.

**Collar wrench**, when carried, will be placed on top of the front saddlebag.

SURPLUS KIT (WHEN CARRIED).

Arranged in front of the shelter half as follows:

**Breeches**, folded once lengthwise and placed parallel to the front edge of blanket, with waistband to the right.

**Shirt, olive drab,** folded so as to display collar and sleeves and placed on seat of breeches, collar to the right.

**Drawers, undershirt, and stockings,** on legs of breeches, in one pile, in the order named from bottom to top, stockings unfolded and feet exposed; **extra shoe laces** neatly folded on top of stockings.

**Shoes,** in front of center of breeches, in line from right to left, toes together, soles up.

**Surplus kit bags,** folded with stencil up and placed on right of each line of shelter tents in each section.

MISCELLANEOUS.

**Nose bags and feed bags, with grain bags inside,** will be piled on axle seats of the gun sections; in remaining sections will be placed on footboards of front carriages.

In the case of individually mounted men of the headquarters and supply companies, they will be placed on the saddle next to the pommel and on top of the blanket.

**Identification tags** will be exposed.

**Housewives,** opened and displayed lengthwise between mess equipment and clothing.

**The company barber kit** will be displayed in front of the shelter half of the man to whom issued.

**The equipment of the battery detail** will be displayed on a paulin placed on the ground adjacent to the store limber; **buzzer** will be connected to the line; **range finders and battery commander's instruments** will be set up.

In the headquarters company buzzers will be connected to the line and instruments set up, but individual equipment, such as flag kits, field glasses, etc., will be displayed at the tents, each man's set on the ground in front of his blanket or surplus kit.

**Battery and store-wagon contents** will be displayed on paulins adjacent to the chests.

The contents of each reel and cart chest will be displayed on a paulin placed on the ground in rear of the chests.

**Forge limbers** will be opened, but the contents will not be removed.

**Saddles, blankets, and bridles** of individually mounted men will be placed on the footboards of the carriages. In the **headquarters and supply companies** this equipment will be placed outside the tents, each set on the owner's side of the shelter half, pommel to the front and on line with the front of the tent; blanket folded and placed over the saddle; bridle over blanket, bits to the right.

**Spare harness** will be placed on the frames of the battery and store wagons.

**Collars: For inspection** the collars will be inverted on the saddles, the zinc surfaces being exposed to the front.

**Fitted shoes** will be carried loose in the forge limber.

Fitted shoes and nails for the mounts of individually mounted men of the headquarters and supply companies will be carried in the off saddle pocket inside the canvas lining. They will be displayed on the saddlebag flaps in rear of the grooming kit. Reel and cart drivers will carry these shoes and nails in the cart chests.

**Unfitted spare shoes, mosquito bars** (packed in suitable boxes), and **company barber kit** will be carried in the field train.

**Veterinary medicines**, packed in a suitable box, will be secured between the spare wheels of the store wagon.

For the headquarters and supply companies these boxes will be carried in the field wagons; forge limbers and store wagons are provided.

## CHAPTER III.

# SERVICE FIRINGS AND TARGET PRACTICE.

[Extracts from Drill and Service Regulations.]

### Section 1. Service Firings.

[Paragraph numbers refer to Drill and Service Regulations for Field Artillery.]

**1044. Angle of departure:** The angle $\phi$ between the plane of site and the line of departure.

**Angle of fall:** The angle $\tilde{\omega}$ between the plane of site and the tangent to the trajectory at the point of fall.

**Angle of incidence:** The angle between the plane of the surface struck and the tangent to the trajectory at the point of impact.

**Burst center, center of burst, or mean point of burst:** The point about which the points of burst of several projectiles are evenly distributed.

**Burst interval:** The distance in the plane of site from the point of burst to the target.

**Burst range:** The distance from the muzzle of the gun to the point of burst.

**Counter slope:** A slope which descends toward the enemy and is wholly or partially hidden from him by the covering crest of the reverse slope.

**Crest:** The summit of a ridge.

**Curved fire:** Fire with low muzzle velocity, the elevation not exceeding 540 mils.

**Danger space:** The distance, in the plane of the slope considered, over which an object of a given height would be struck.

**Deflection**: The angle between two vertical planes containing, one the line of sight, and the other the axis of the bore.

**Deflection center**: The point about which bursts in air or impact are evenly distributed in direction.

**Direct fire**: Fire with high muzzle velocity, the elevation not exceeding 360 mils.

**Direct laying**: Pointing the gun for direction and elevation by directing the line of sight upon the target.

**Drift**: The departure $Kf'$ of the projectile from the plane of fire due to its rotation and to the resistance of the air.

**Elevation**: The angle $\phi'$ between the plane of site and the axis of the bore when the gun is laid.

**Height of burst**: (1) The vertical angle between the plane of site and a right line joining the muzzle of the gun and the point of burst. (2) The ordinate of a point of burst.

**Height of burst center**: The point about which bursts in air are evenly distributed in height.

**High angle fire**: Fire with elevation exceeding 540 mils.

**Indirect laying**: Pointing the gun for direction by directing the line of sight upon an objective other than the target, and for elevation by the use of a quadrant or elevation level.

**Jump**: The angle J between the line of departure and the axis of the bore before firing; hence, the difference between the elevation and the angle of departure.

**Line of departure**: The prolongation of the axis of the bore at the instant the projectile leaves the gun.

**Line of sight**: The right line passing through the sights and the target or the aiming point.

**Mean height of burst**: (1) The height of the burst center. (2) The average of several heights of bursts.

**Mil**: The unit of angular measure, one sixty-four-hundredth of a circle. The arc which subtends a mil at the center of a circle is, for practical purposes, equal to one one-thousandth of the radius. The arc and its tangent are nearly equal for angles not greater than 330 mils.

**Military crest**: The line nearest a crest from which all the ground toward the enemy may be seen and reached by fire.

**Muzzle velocity**: The velocity of the projectile at the instant it leaves the bore. Velocities are measured along the tangent

to the trajectory at the point considered and are expressed in feet per second.

**Normal corrector:** The corrector setting which gives a normal height.

**Normal height:** The height of burst giving the maximum effect from a projectile.

**Ordinate:** The distance of a point of the trajectory from the plane of site. The **maximum ordinate** is the ordinate of the highest point of the trajectory.

**Parallax:** The angle at any point subtended by any given line.

**Plane of fire:** The vertical plane through the line of departure; also called *plane of departure.*

**Plane of site:** A plane containing the right line from the muzzle of the gun to the target, and a horizontal line perpendicular to the axis of the bore at the muzzle.

**Point of burst:** The point at which a projectile bursts in the air or at which it would have burst in the air had it not struck the ground.

**Point of fall, of impact,** or **of graze:** The point where the projectile strikes.

**Probable error:** The amount of error that, in a large number of occurrences, will be as often exceeded as not.

**Quadrant angle of departure:** The angle $(\phi+\epsilon)$ between a horizontal plane and the line of departure.

**Quadrant elevation:** The angle $(\phi'+\epsilon)$ between a horizontal plane and the axis of the bore when the gun is laid.

**Range:** The distance from the muzzle of the gun to the target.

**Range center, center of impact,** or **mean point of fall:** The point about which the points of fall, reduced to the plane of site, are evenly distributed.

**Range of burst center:** The point about which bursts in air are evenly distributed in range.

**Site:** The angle between a horizontal plane and a right line joining the muzzle of the gun and the target; called also the *angle of position.* The origin of site scales is taken at 300.

**Trajectory:** The path described by the projectile in its flight.

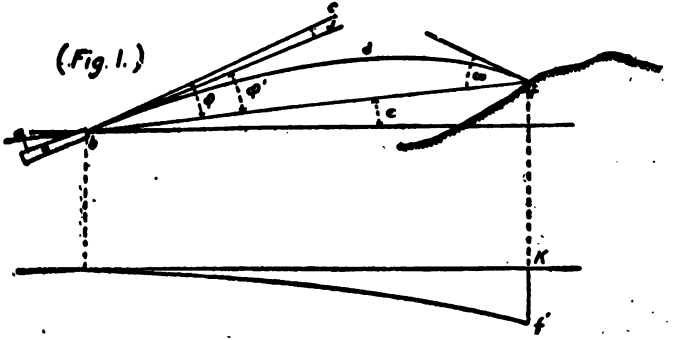
**Remaining velocity:** The velocity of the projectile at any point of the trajectory.

**Reverse slope:** The slope which, from the direction of the enemy, is hidden by a ridge of which the slope is a part.

**Terminal or striking velocity:** The remaining velocity at the point of burst or point of fall.

**Time of flight:** The time in seconds required for the projectile to travel from the muzzle of the gun to any point of the trajectory—usually to the point of fall or of burst.

**The Trajectory.**




1045. The relation between the elements of the trajectory is influenced by the muzzle velocity of the projectile, by the angle of departure, and as soon as the projectile has left the bore, by the force of gravity, the resistance of the air and the rotation of the projectile around its axis.

If the force of gravity, the resistance of the air, and the rotation of the projectile around its axis could be eliminated, the projectile would describe a straight line and its velocity would remain constant. If the projectile be supposed to be influenced only by its velocity, the angle of departure, and the force of gravity, it can easily be shown that it would describe a curve, the highest point of which would be the center of the trajectory, and that both halves of the trajectory would be identical in shape. But the resistance of the air acts to reduce the velocity

of the projectile from the instant it leaves the muzzle, and consequently influences the path which it describes, so that in reality the highest point of the trajectory is nearer to the far end, and the two parts of the trajectory are unequal and unsymmetrical.

In order to force the projectile to travel along its trajectory with its point foremost, a rotary motion is imparted to it by the rifling in the gun.

**1046.** When the target and the gun are in the same horizontal plane, the proper elevation for the gun is the range-table elevation.

When they are not in the same horizontal plane, the proper elevation for the gun is the range-table elevation plus or minus the site. The site is additive if the target is higher than the gun, subtractive if it is lower.

**1047.** When direct laying is used, the site is automatically taken into account, as the line of sight is directed on the target. On the other hand, when the elevation is given by the quadrant it must be increased or diminished by the site, so as to bring the trajectory on the target.

**1048.** The remaining velocity decreases as the range increases.

**1049.** The time of flight increases more rapidly than the range.

**1050.** The drift increases more rapidly than the range. By increasing the deflection by the amount of drift for any range the axis of the bore may be pointed as far to the left of the target as the shot would drift to the right.

**1051.** The fuze of the shrapnel permits its use for either percussion or time fire. In time fire, under normal atmospheric conditions, the fuze should cause explosion at a determined burst interval.

**1052.** When the time train burns too slowly, low points of burst, bursts below the target, or explosions on impact are obtained. When it burns too quickly, high points of burst are obtained.

**1053.** When a shrapnel explodes in the air the bullets are expelled from the case to the front, their paths, taken collectively, assuming the general shape of a cone, called the cone of

**dispersion**, the apex of which is the point of burst, the axis coinciding approximately with the continuation of the trajectory.

The angle between the two lines cut from the surface of the cone of dispersion by a plane passing through its axis is called **the angle of opening.**

The angle of opening depends upon the relation between the velocity of rotation and the remaining velocity.

MANIPULATION OF THE TRAJECTORY IN THE PLANE OF FIRE.

**1054.** In the course of firing, the captain will be constrained to utilize the relations existing between the elevation, the site, and the corrector, which are the following:

The location of the trajectory in the vertical plane depends upon the site and the elevation. It may be changed by changing one or the other of these elements, or the same location may be retained by making the proper changes of both in opposite senses.

A variation of the site affects the range the same as an equal variation of the elevation.

The height of burst under normal conditions depends only on the site and the corrector.

If the site only is varied, the point of burst is displaced in height, but not in range; if the corrector only is varied, the point of burst is displaced at the same time in both height and range. Simultaneous and equal but opposite changes of site and corrector cause no change in height of burst, but the burst range changes.

The burst range depends only on the fuze-setter range and corrector settings. It is increased or diminished by increasing or diminishing the fuze-setter range or by lowering or raising the corrector.

The point of burst of two or more rounds are not coincident
's these three elements remain constant, or unless all three
at the same time by suitable amounts and in the proper

ifferences in range shown in the range tables as corre-
to given variations of elevation are measured in the
site. On slopes greater than the plane of site, such as

a counter slope, the difference in ranges to points of fall will be less than that in the tables. On terrain inclined in the opposite sense, such as a reverse slope, the difference in ranges to points of fall will be greater than that in the tables.

## GENERAL PROVISIONS.

**1055.** To render effective assistance to other arms upon the battle field, field artillery must be able to deliver a timely and overpowering fire upon any designated part of the enemy's position.

**1056. The battery is the fire unit.**

**1057.** Those areas of the hostile position within which fire is to be delivered by particular artillery units are called **sectors.** They are usually described by reference to prominent points of the terrain, right lines to which, from the observing station of the commander of the artillery unit considered, limit the area assigned. Within, and sometimes outside, the sectors assigned, fire must be delivered upon objectives called **targets.**

**1058.** The tactical command of one or more fire units with a view of bringing their fire to bear upon a suitable position upon the proper targets at the appropriate time is called fire **direction.**

**1059.** The dispositions that must be made and the technical determinations of the data necessary before opening fire constitute **preparation of fire.**

**1060. Conduct of fire** consists in employing the technical means necessary to cause fire of the desired nature to be brought to bear upon the target.

**1063.** Owing to inaccuracies in the determination of firing data, to the influence of weather conditions, to errors made in the service of the guns, and to imperfections in matériel and ammunition, fire must be delivered and, on the basis of observations, corrected to insure effectiveness upon the target. During such fire effect is desirable. Fire of this nature is called **fire for adjustment.**

When fire has been thus adjusted it must be continued, often with changed data, to secure e[illegible]ing such fire continued observation is necessar[illegible] is called **fire for effect.**

## POSITIONS.

When artillery may be posted for immediate action, in observation or in readiness.

When posted for immediate action the guns are unlimbered and all is opened as promptly as possible upon the indicated

When posted in observation the guns are unlimbered and all preparations made for opening fire at the desired moment upon the [illegible] or expected targets.

When posted in readiness the guns are not unlimbered. They may be held under cover near a position for possible immediate occupation, but so that they can be moved quickly to another locality as the development of the tactical situation so requires. In the meantime the immediate tactical situation is studied, positions in the neighborhood for posting the guns to meet different contingencies are selected, and preparations are made for occupying the selected positions and for promptly opening fire upon the existing or expected targets.

Positions are defined as **masked** or **in the open**, according as they afford concealment from the hostile position or not.

When no concealment is afforded the guns are said to be **in the open.**

When concealment is afforded, the guns are said to be **under cover** or **in a masked position**, and the fire is referred to as **masked fire.**

The degree of concealment varies. Thus:

(*a*) If the guns are posted so that through the sights the hostile position can be seen over the mask, they are said to be **in the open.**

(*b*) If where a dismounted man can just see the hostile position over the mask, they are said to have **dismounted defilade.**

(*c*) If where a mounted man can just see the hostile position over the mask, to have **mounted defilade.**

(*d*) If so that the flash of the gun will be concealed from the hostile position, to have **flash defilade.**

Positions are described by the foregoing terms.

**1066.** The hostile position against which defilade is taken may be the target to be attacked; preferably, however, defilade is taken against the highest position from which enemy parties can effectually observe.

**1067.** A defilade of 4 yards is sufficient to conceal the flash of the gun by day. A defilade greater than this is still referred to, however, as **flash defilade.**

Complete concealment is obtained only in positions having flash defilade.

## COMMUNICATIONS.

### METHODS.

**1095.** The best means of communication is the voice, using the megaphone if necessary, but frequently communication must be by telephone, by buzzer, by signals, by relays of men for voice transmission, by courier. The whistle also may be used.

**1096.** Alternative means of communication should habitually be established.

**1097.** Each battery, each battalion headquarters, and each regimental headquarters is provided with suitable apparatus for signaling and for electrical communication.

### BATTERY COMMUNICATION.

**1099.** The battery signalers comprise a corporal, designated **telephone corporal,** and two privates designated as **operator No. 1** and **operator No. 2.**

**1100.** The telephone corporal is in immediate charge of and responsible for all the signal equipment of the battery.

He makes such tests and repairs as he may be authorized to make, and reports all trouble which he can not remedy to the captain personally at the first opportunity.

He is responsible that the kind of communication required is established quickly and effectively.

He reports to the captain when communication is established with the guns and with the battalion commander. Similarly he reports any break occurring in the line of com[illegible]

He acts as operator at the battery station on the line to the battalion station.

When available he assists in relaying commands by voice.

**1101.** Whenever the battalion line is laid near a battery observing station the telephone corporal habitually establishes communication over it with the battalion station.

**1102.** Operator No. 1 assists in establishing the kind of communication required.

He reports to the executive when communication is established. Similarly he reports any break occurring.

He acts as operator at the station of the executive.

He is assisted by **scout No. 1.**

**1103.** Operator No. 2 assists in establishing the kind of communication required.

He reports to the telephone corporal or to the captain when communication is established. Similarly he reports any break occurring.

He acts as operator at the battery commander's station on the battery line.

**1104.** When signal or wire communication with the battalion station is unnecessary, the operators may be employed for communication with auxiliary observers, with scouts, or with other units.

### BATTALION COMMUNICATION.

**1105.** Battalion communication is established and maintained by a **sergeant major, a signal corporal, a signal private,** an **agent** from each battery, and the battalion **musician.**

**1106.** The sergeant major supervises the maintenance of all the signal equipment of the battalion.

During the reconnaissance of the position he receives the battalion commander's instructions as to the kind of communication required and supervises its establishment.

If communication by wire is to be established, he examines the ground, selects the route for the line to follow, and causes the reel cart to lay the wire.

He is in general charge of all messages received or sent by wire, signals, or agents at the battalion station.

He assists in sending and receiving messages.

1107. Whenever the regimental line is laid near a battalion observing station the battalion sergeant major habitually establishes communication over it with the regimental station.

1108. The signal corporal is in immediate charge of and responsible for all the signal equipment of the battalion.

He makes such tests and repairs as he may be authorized to make and reports all trouble which he can not remedy to the adjutant personally at the first opportunity.

Under the direction of the sergeant major he establishes the kind of communication required.

He reports to the adjutant or the battalion commander when communication is established with the batteries. Similarly, he reports any break occurring.

He acts as operator at the battalion station on the line to the batteries.

1109. The signal private assists the signal corporal in the maintenance of the signal equipment and the establishment of communication.

He reports to the adjutant or major the establishment of communication with the regimental station. Similarly, he reports any break occurring.

He acts as operator at the battalion station on the line to the regimental station.

When not otherwise engaged he acts as recorder for the signal corporal.

1110. Agents carry messages to the various elements of the command.

1111. The battalion musician, when not otherwise engaged, assists the sergeant major at the battalion station.

1112. Signal equipment and personnel not required for signal or wire communication with the batteries may be employed for communication with auxiliary observers, with scouts, or with other units.

1113. The wire may usually be most conveniently and rapidly laid by commencing at the battalion station, because the reel must be taken there with the cart. But if time permits, the wire is preferably laid so that, at the completion of the task, the reel will be near the battalion station. Wire may thus be [illegible] immediately available for extension of the line.

REGIMENTAL COMMUNICATION.

**1114.** Signal or wire communication between the regimental commander and his battalion commanders, and between the regimental commander and the next higher commander, is established in a manner similar to that in a battalion, corresponding individuals performing similar duties.

LAYING THE WIRE.

**1116.** The battery telephone corporal attends to stretching the wire and setting up the stations in cases involving the use of the battery hand reels.

**1117.** The sergeant major ordinarily accompanies the reel to make sure that it follows the most appropriate route, to see that at the different stations the operators are ready and make proper connection to the line, and to give the line guard such special instructions as may be necessary to insure the proper placing and protection of the line.

**1118.** Every precaution must be taken to avoid betraying the position when laying the wire. To accomplish this it may frequently be desirable to cause the reel cart to follow a route considerably in rear of the line which the wire is to occupy and to carry the wire by hand to its proper position after the unreeling has been completed.

**1119.** It is essential that all wire be so laid as to be as far as possible out of the way of probable movements, either of field artillery, of other troops, or of individuals. The wire is stretched either before or after the posting of the guns, as may be most suitable in the particular case. Whenever practicable it is best to run the wire in front of the line of guns rather than in rear. When the line must be laid on ground which has to be crossed by teams in taking up the position it may be best to wait until the guns have been posted and until the teams have cleared the position before beginning to lay the wire.

**1120.** For effective wire communication good grounds at the instruments are essential. Moist earth should be sought. In

dry earth the most favorable location is one near the roots of grass or brush. A satisfactory ground may be obtained through a rod driven into a growing tree.

### GUARDING THE LINE.

**1121.** It is the duty of all men, knowing the position of a wire and seeing it approached by others who are evidently unaware of its location, to give warning by calling, "Wire."

**1122.** As a rule sufficient warning as to the location of a line pertaining to a battery can be given without its being necessary to detail a special line guard. When necessary, however, the executive details one or more men to patrol and guard the line.

**1123.** The line guard pertaining to a reel cart follows the reel when the wire is being laid, shifts the wire to the side of the road, and takes such other precautions as may be practicable for protecting the wire and minimizing its interference with traffic.

Often the wire may be suspended from trees or posts high enough to permit the passage of mounted men. At road crossings it may be covered with boards or earth.

After the wire is laid the line guard patrols the line, warning individuals who approach it of its location, and making repairs when necessary. The necessary men are detailed from the headquarters detachment or, if no members of such detachments are available at the time, they are temporarily detailed from the batteries.

### TO USE THE TELEPHONES.

**1124.** In speaking into the transmitter the head should be held in a natural position, the lips about an inch from the transmitter. The transmitter should be held with its face vertical and should be protected from the wind.

In a high wind good results may be obtained by pressing the transmitter against the throat on either side of the windpipe.

Use a moderate tone of voice and speak slowly and distinctly, being careful not to slur the words or syllables, but to enunciate clearly each sound.

Never shout or raise the pitch of the voice.

Never use the letter "O" for zero; when so used it is often mistaken for "four."

The digit "9" being often difficult to understand, the word **nine** may be substituted therefor.

If it is necessary to repeat, use more care as to distinctness, but do not raise the voice. A single number not understood may be accentuated by counting up to it and emphasizing it. Thus, if the figure 4 is not understood, say, **FOUR**: one, two, three, **FOUR**.

In receiving observe the following rules:

1. Keep the mind on the message; a person can not receive correctly when he is thinking of something else.
2. Keep the receiver close to the ear.
3. Do not interrupt the sender unless absolutely necessary.
4. Caution the sender when he is speaking too loudly, not loudly enough, or too rapidly.

**1125.** In the service buzzer one good battery placed in position next to the hinge of the battery door will operate the telephone element, while two batteries are needed for buzzer communication.

When no serviceable tungsten batteries, type A, are available, four dry cells of any type may be utilized, as follows: Remove the old tungsten batteries; connect the four dry cells in series; attach one end cell lead to lug P of induction coil, the other end cell lead to the horizontal bar alongside the coil. This operates the buzzer element.

The telephone is operated by connecting the binding post T to the connection between the two middle cells.

### USE OF THE BUZZER.

**1126.** Transmission by buzzer is more accurate than by telephone, but it is slower. It is particularly appropriate when insulated wire has been injured or when bare wire only is available. Its use may be necessitated by noise and induction rendering the telephone unreliable. Efficiency of buzzer service requires a high state of instruction in the maintenance and use of the instrument.

TESTS.

**1128.** Instrumental tests are described in paragraphs 710 and 711.

SIGNALING.

**1129.** Semaphore signaling is the most rapid visual method.

**1130.** Under favorable conditions semaphore signals with the arms can be read up to 600 yards. In a clear atmosphere semaphore signaling with the flags can be read without field glasses up to 1,200 yards; with glasses, up to 2,000 yards. Special attention must be given to conditions of light and background and to defilade from the enemy.

VOICE RELAY.

**1131.** A chain of men for relaying by voice may become necessary. But the number of men between the sender and receiver should not exceed two, as opportunities for error are thus rapidly increased. In any case such communication will be slow, and it will be effective only if the men have been trained to the duty.

COURIERS.

**1132.** Messages by courier should, in general, be written. If sent orally, they should be of the simplest character, usually involving only a single statement.

WHISTLE.

**1133.** A long blast of the whistle denotes **cease firing.** It is used when the command is likely to be unheard or to be delayed in reaching the guns. It must not be used when there is any possibility of its being heard by batteries other than the one intended.

PREPARATION OF FIRE.

**1136.** By skillful preparation of fire the time required to secure adjustment may be greatly abridged, and the ability may

be trained to strike a vulnerable enemy by surprise with fire which is from the outset effective.

**1137.** In the preparation of fire the captain usually requires assistance. This is obtained from members of the special details consisting of the instrument detail, the signal detail, and the scout detail.

The instrument detail consists of one instrument sergeant, one range-finder operator (generally a first-class private), and one horse holder.

The signal detail consists of one telephone corporal and two operators, designated as operator No. 1 and operator No. 2.

The scout detail consists of one corporal and one second-class private in peace and of two corporals in war.

**1138.** The instrument sergeant is in general charge of the instruments and equipment used by the special details.

He is informed at the earliest possible moment as to the situation, the sector assigned, the location of hostile and friendly troops, the reference point, the target, the position of the guns, and the aiming point.

He sets up the telescope and the aiming circle, operates the latter, and calculates firing data.

He keeps a record of the firing and assists the captain in observing the fire and studying the terrain, and in collecting, recording, and transmitting data.

**1139.** The range finder is responsible for the condition, care, and operation of the range-finding instrument.

He receives the same information as the instrument sergeant and finds for him the ranges required.

He assists the captain in observation of the fire, the enemy, and the terrain.

**1140.** Scout No. 2 is informed as early as possible as to the situation, the sector assigned, the location of hostile and friendly troops, and the target.

He prepares such place or panoramic sketches as may be directed.

He observes the sector, especially the target, reporting changes in its formation, appearance, and movement, and any effect upon it.

He may be assigned to particular duties, such as to observation regarding the security of the battery, to observation of friendly troops or of hostile bodies other than the target, to assistance of other members of the detail.

1141. Other members of the battery commander's detail not otherwise engaged may be assigned to duties in connection with preparation of fire and its conduct.

1142. Whenever a position is occupied, all practicable steps will be taken to provide protection for the personnel additional to that afforded by the matériel, and shallow trenches will be prepared to facilitate shifting the trails.

### MEASUREMENT OF ANGLES.

1177. Angles may be measured in mils by means of the telescope, the aiming circle, the ruler, the scale in the field glass or its known field of view, or by handbreadths.

The telescope and the aiming circle are instruments of precision. The graduated field glass affords means of measuring angles accurately. When neither the telescope nor aiming circle is available, or when time does not admit of their being set up, use may be made of the less reliable means, practice with which will insure considerable accuracy.

1178. For preliminary practice, horizontal and vertical scales of mils should be laid off on any convenient vertical surface, using an instrument of precision.

As the ruler is already graduated the distance at which it should be held from the eye so that its graduations will cover corresponding spaces on the scales must be determined by trial. Usually this distance is then fixed by tying the ruler cord to the clothing or by knotting it and holding the knot in the teeth.

When the hand is used for angular measurements, its distance from the eye should be such as may be assumed naturally and uniformly and maintained without fatigue. The portions of the scales then covered by different parts of the hand can be determined and memorized.

The width of the field or view of the field glass can be determined similarly and quite accurately divided by eye into halves, quarters, and eighths.

In making the above calibrations the operator must stand at the position of the instrument used in establishing the scales.

178. In measuring by handbreadths, each individual will obtain the best results by predetermining, according to the following table just described, the value in mils of certain parts of the hand.

Average values are given below, it being presumed that the hand is held vertically, palm outward, arm fully extended to the front:

| | Mils. |
|---|---|
| Width of first finger at second joint | 40 |
| Width of second finger at second joint | 40 |
| Width of third finger at second joint | 35 |
| Width of fourth finger at second joint | 30 |
| Width of first, second, and third fingers at second joint | 115 |
| Width of first, second, third, and fourth fingers at second joint | 150 |
| Width of thumb | 40 |

180. However, practice should be had on varied terrain in measuring both horizontal and vertical angles with the field glass, the quick and the hand, the results being checked by accurate instrumental measurements.

181. Frequently the terrain presents features that make easy the construction of round vertical and horizontal scales. When such is not an objective which will serve to measure angles that must be noted during firing.

182. In order to secure speed and calculation of angles and the time required the noise will, the angles, particularly if the [illegible] are used. It is important, therefore, to reduce [illegible] as much as possible by resort to various expedients.

[illegible] possible, may such, across the face of the [illegible] the aiming point or target. [illegible] auxiliary point; or a right line [illegible] the aiming point or target. An [illegible] may thus be reduced by as much as [illegible]

[illegible] a target may be fixed with [illegible] the observer by placing himself [illegible] measurement; of as much as 3,200 mils.

## DETERMINATION OF FIRING DATA FOR INDIRECT LAYING.

I. The elements to be determined are:

(*a*) The deflection of the directing piece.
(*b*) The deflection difference.
(*c*) The angle of site.
(*d*) The corrector.
(*e*) The range.

The *right* gun is usually taken as the *directing piece.*

The *deflection difference* necessary to obtain *parallel fire* is usually used for the opening salvo. Parallel fire is that in which the pieces are so laid that the lines of fire of all the other pieces are parallel to that of the directing piece. This deflection difference is easier to obtain and requires less time to calculate than that for either converging or distributed fire. After the sheaf is once formed, it may be shifted to the right or left and opened or closed by very simple commands at the will of the battery commander.

The *angle of site* is, of course, the angle made by the line joining the gun and target with the horizontal. In direct laying this difference of level is corrected for automatically, by sighting directly upon the target; but in indirect laying this difference must be determined, and is mechanically added to or subtracted from the elevation due to the range alone, in order that the projectile may strike the target.

The *instruments* used in the determination of these elements are the *battery commander's telescope,* or *aiming circle,* and a *range finder,* the latter usually being of the self-contained, short-base, single-observer type.

II. The determination of these elements of the firing data will be explained in order in the paragraphs that follow. But, before taking up this, let us first understand the determination of the units used and the trigonometric functions involved. The *unit of distance* is the *yard,* since ranges are always measured in yards. The *unit of angular measurement* is called a mil. The true mil is 1/1000 of the radian. The circumference of a circle$=2\pi r=2\times3.1416r=6.2832r$. Therefore a circumference subtends an angle of 6.2832 radians or 6283 true mils. To facilitate computations, however, the circumference of the

azimuth circle of the battery commander's telescope is divided into 6,400 equal parts called mils. The unit angle then becomes the angle subtended at the center by an arc whose length is 1/6400 of the circumference, or 1/1000 of the radius nearly. Thus, having given an angle of 1 mil and a radius of 1,000 yards, it is readily seen that the corresponding arc is 1 yard in length. Or, having given an angle of 5 mils and a radius of 3,000 yards, we determine that the subtending arc is 15 yards in length. It would be equally easy to determine the angle at the center, having given the radius and the arc. But for practical purposes it is impossible to measure the length of the arc. We must therefore use instead of the arc some easily determined function of the angle which will as nearly as practicable represent the true value of the angle itself. To reduce our problem to one involving only the solution of a right triangle, we may use either the natural sine or the natural tangent, since the ratio of the arc to the radius (the radian) is always intermediate between the natural sine and the natural tangent, and since for small angles the sine and tangent are practically equal. For this reason as well as for another which will be shown later, it is better to use the sine of the angle as representing the true value of the angle itself.

Suppose, for example, that we have a right triangle, the hypotenuse being 3,000 yards and the side opposite the angle we wish to measure being 6 yards, to find the value of the angle opposite the given side. We readily see that the sine of the angle is equal to 6/3000 or 2/1000 of the radius. We have already showed that our unit of measure, the mil, equals 1/1000 of the radius. Therefore the required angle equals 2/1000 divided by 1/1000, or 2 mils.

From this we have the rule, namely, *the angle in mils at the center is equal to the given offset expressed in yards, divided by the radius expressed in thousands of yards.* For example, a target is 60 yards above a gun, and the range from gun to target is 4,000 yards. What is the angle of site of the target? Applying the foregoing rule, we have 60/4, or 15; that is, the target is 15 mils above the gun.

By referring to figure 1 we see the additional reason, referred to above, why it is better to use the sine instead of the tangent

as representing the true value of the angle itself. The distances *BT* and *BP* are measured from *B* (the position of the range finder and the B. C. telescope), and ordinarily by means of a range finder; and it is more natural to use these than it is to use *TE* and *PC*, which can be only roughly estimated in any case. In addition, using the former necessitates estimating by eye the distances *BE* and *BC* only, a comparatively simple matter, whereas in using the tangents we should have to estimate *TE* and *PC* as well, which is not only much more difficult but a great deal more likely to give less accurate results, since an equal and opposite percentage of error in both cases would produce a greater error in the result obtained by the latter. For example, assuming that *BT* can be accurately measured, an error of 10 per cent in either direction in estimating *BE* would cause only an equal error in the value of the angle *GTB;* but if an equal and opposite error of 10 per cent be made in *TE* also, the result obtained by using the tangent would be approximately twice as great.

Consequently, while our system of measurements is not mathematically exact, it is nearly enough so to fulfill all practical requirements, and the only errors worth considering would be those arising from erroneous estimations of the distances *BE* and *BC*.

III. **Determination of the elements.**—(*a*) *The deflection of the directing piece.*—The method used is called the method of "parallel lines." (See fig. 1.) In figure 1, *G* represents the right or directing gun of the battery, *B* the observing station, *T* the target, and *P* the aiming point. *PP'* and BC are perpendicular to *GP*; and *TT'* and *BE* are perpendicular to *GT*. The method consists in establishing by means of offsets from *P* and *T* imaginary lines *BP'* and *BT'* parallel to *BP* and *BT*, respectively, thus forming the angle *P'BT'*, or *D'*, which, as the figure shows, is equal to the required angle *PGT*, or *D*, the deflection of the directing piece. The lines *BP'* and *BT'* having been established, it remains only to measure the angle *P' BT'* with the B. C. telescope, remembering that the angles are always measured in the positive or counterclockwise direction. In practice, however, the angle *A* is measured and the angles *PBP'* and *T'BT* are calculated mentally and subtracted semimechanically from the

angle $A$, so that the final reading of the azimuth circle represents the angle $D'$, or $D$, the required deflection of the directing piece.

*To obtain the deflection of the right piece*, proceed as follows: Set up and level the B. C. telescope at the observing station. Set the azimuth circle at zero by means of the quick-setting device and the azimuth-micrometer head. Loosen the slow-motion clamp screw and swing the telescope so as to point the objective at $P$; tighten the clamp screw and by means of the slow-motion screw put the vertical cross hair on the aiming point $P$. The telescope now points at $P$, the azimuth circle reads zero and the instrument is clamped. Next, estimate the distance $BC$ to be, say 90 yards; assume the measured distance to the aiming point as 6,000 yards. Calculate mentally the angle $PBP'$ in mils as 90/6, or 15. Then with the slow-motion screw set the "0" of the reticule scale *toward your left* until the "+15" division of the scale is on the aiming point. You have thus established the line $BP'$ and subtracted the angle $PBP'$ without changing the zero reading of the azimuth scale; and are therefore ready to measure from the line $BP'$, since the zero now points to $P'$. Next, loosen the quick-setting device and swing the telescope until the objective points at the target $T$. Throw in the quick-setting device and by means of the azimuth micrometer head put the vertical cross hair ("0" point) on the center of the target. Estimate the distance $BE$ to be, say, 150 yards; assume the measured distance $BT$ as 5,000 yards. Calculate mentally the angle $T'BT$ in mils as 150/5, or 30. Now with the azimuth micrometer head set the zero of the reticule scale *toward your right* until the "—30" division of the scale is on the center of the target. You have thus established the line $BT'$ and subtracted the angle $T'BT$ from the exterior angle $P'BT$; and the reading now shown on the azimuth circle is equal to the required angle $P'BT'$, which is the required deflection.

Now leave the azimuth circle clamped and with the slow-motion screw turn the vertical cross hair of the reticule back to the center of the target. (By doing this you do not disturb the deflection reading, and can refer to it in case you happen to forget it before you transmit the data to the battery.) The telescope is now in position for measuring the angle of site of the target and for observing the height of burst and deflection of the shots.

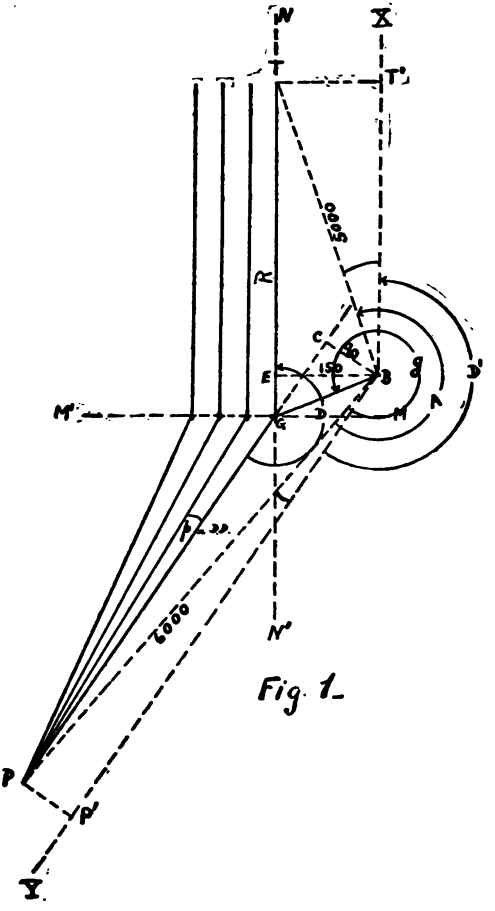



Fig. 1.

**General rule.**—Always move the zero of the reticule scale in the direction of the imaginary "parallel line," assuming that you are facing towards either aiming point or target as the case may be. Thus in Figure 1, when you face toward the aiming point, as you naturally would in sighting on it, the "parallel line" is to the left of the aiming point; therefore move the zero *toward the left.* When you face toward the target the other "parallel line" is to the right of the target; therefore move the zero *toward the right.*

NOTE.—The great advantage of this method is that after a little practice it becomes mechanical; does not require the aid of pencil, pad, formula, or notebook; is quickly applied and more likely to be correctly used when the observer is working under stress than a more complex method.

There is another solution of the method of "parallel lines" which gives more accurate results but consumes more time in the solution. The same principles are applied; but, instead of estimating the distances *BC* and *BE* (fig. 1), the actual distance *BG* is measured, usually by a stadia of some kind, and the actual distances *BC* and *BE* are then obtained by multiplying the distance *BG* in yards by the natural sines of the angles $g$ and $(A-g)$, respectively. For this method of solution an obliquity table with sine factors, a table of stadia distances, and a notebook, ruled for convenience, as shown below, are necessary.

| Obliquity table. | | | | | Stadia distances. | | | |
|---|---|---|---|---|---|---|---|---|
| Angles in hds. of mils. | | | | Sine factor. | Mils. | Yards. | Mils. | Yards. |
| 0 | 32 | 32 | 64 | 0.0 | 40 | 500 | 210 | 95 |
| 1 | 31 | 33 | 63 | .1 | 50 | 400 | 220 | 90 |
| 2 | 30 | 34 | 62 | .2 | 60 | 333 | 230 | 87 |
| 3 | 29 | 35 | 61 | .3 | 70 | 286 | 240 | 83 |
| 4 | 28 | 36 | 60 | .4 | 80 | 250 | 250 | 80 |
| 5 | 27 | 37 | 59 | .4 | 90 | 222 | 260 | 77 |
| 6 | 26 | 38 | 58 | .5 | 100 | 200 | 270 | 74 |
| 7 | 25 | 39 | 57 | .6 | 110 | 182 | 280 | 72 |
| 8 | 24 | 40 | 56 | .7 | 120 | 165 | 290 | 69 |
| 9 | 23 | 41 | 55 | .7 | 130 | 158 | 300 | 66 |
| 10 | 22 | 42 | 54 | .8 | 140 | 143 | 350 | 57 |
| 11 | 21 | 43 | 53 | .9 | 150 | 133 | 400 | 50 |
| 12 | 20 | 44 | 52 | .9 | 160 | 125 | 500 | 40 |
| 13 | 19 | 45 | 51 | .9 | 170 | 118 | | |
| 14 | 18 | 46 | 50 | 1.0 | 180 | 111 | | |
| 15 | 17 | 47 | 49 | 1.0 | 190 | 105 | | |
| 16 | 16 | 48 | 48 | 1.0 | 200 | 100 | | |

The table of stadia distances given above may be easily expanded by interpolation so as to read in multiples of 5 mils. This particular table is based on the use of a horizontal stadia 20 yards long, made of sash cord or other light rope, with a light stake about 2 feet long fastened at each end.

To use the stadia, it is stretched out by two men, one at the position marked for the right gun, and is so held as to be perpendicular to the line joining the right gun and B. C. station. At the latter point the battery commander or instrument sergeant, looking through the telescope, notes the number of mils subtended by the stadia. Then by reference to his table he readily determines the actual distance *BG*.

It would be a fairly simple matter to construct a folding self-reading stadia of the vertical type, based on the distance apart in mils of the horizontal lines in the reticule scale of the tele-

scope. A table of stadia distances corresponding to such a stadia could be easily made. This stadia would have the considerable advantage of requiring but one man to operate it.

The figure given below illustrates how the note book referred to should be ruled on each page.

| | *Yds.* | *Mils.* | *A.* |
|---|---|---|---|
| P | | | |
| T | | | |
| G | | | |
| | | | |

SOLUTION OF A PROBLEM.

(*a*) Measure the distance BG in yards and record it opposite G in both the "yds." and "mils" columns.

(*b*) Measure the distance to the aiming point and record it, in thousands of yards, opposite P in the "yds." column.

(*c*) Similarly measure and record the distance to the target, opposite T in the same column.

(*d*) Measure counterclockwise the angle from P to T, that is A, and record it under "A."

(*e*) In a similar manner measure the angle from P to G, that is G, and record that opposite P in the "mils" column.

(*f*) Take the numerical difference between the angles A and P and record that opposite T in the same column.

Suppose (in fig. 1)—

BG_____ 200 yds.
BP_____ 6,000
BT_____ 5,000
A _____ 4,100 mils.
P _____ 5,900

The next phase of the solution, that of recording the data and determining the corrections to be applied to A, will be as shown below:

| | *Yds.* | *Mils.* | *A.* |
|---|---|---|---|
| P | 6 | 5,900 | 4,100 |
| | | | 14 |
| T | 5 | 1,800 | |
| | | | 40 |
| G | 200 | 200 | |
| | .4 | 1 | |
| | 6)80.0 | 5) 200 | |
| | 14 | 40 | |

The same rule for determining whether the corrections (14 and 60) are additive or subtractive applies here as in the first method described. In this problem, both are subtractive, as may be seen by referring to figure 1.

The problem as finally solved will then appear on the notebook, as shown below:

| | *Yds.* | *Mils.* | *A.* |
|---|---|---|---|
| P | 6 | 5,900 | 4,100 |
| | | | —14 |
| T | 5 | 1,800 | 4,086 |
| | | | —40 |
| G | 200 | 200 | 4.046=DF required. |
| | .4 | 1 | Announce as 4,050. |
| | 6)80.0 | 5) 200 | |
| | 14 | 40 | |

(*b*) *The deflection difference* (see fig. 1).—As stated in Paragragh I, the deflection difference sought is that necessary to obtain parallelism of the lines of fire. *This is equal to the parallax of the aiming point.* The parallax of the aiming point is the angle in mils subtended at the aiming point by one platoon front (20 yards) at the battery. This parallax has its

maximum or normal value when the line joining the right gun and the aiming point is normal to the front of the battery; that is, when the angle $MGP$ is a right angle. The parallax is zero when the aiming point is directly on the flank, in prolongation of $MM'$. If, however, the line $GP$ is oblique to the normal ($NN'$) to the battery front, then the parallax must be corrected for the obliquity of $GP$ with respect to this normal. *The corrected parallax is equal to the normal parallax multiplied by the cosine of the angle of obliquity.*

In figure 1 the obliquity of $P$ is the angle $N'GP$. But to compute the exact parallax in every case would require the aid of a table of trigonometric functions and would consume too much valuable time. To avoid this, we make use of the following rule:

**1157.** The correction for obliquity may be determined with sufficient accuracy by multiplying the parallax, obtained through assuming the objective to be on the normal to the platoon front considered, by .9, .7, .4, and 0.0, when the angular distance of the objective from the normal is 400, 800, 1,200, and 1,600 mils, respectively. By interpolation the multipliers for other obliquities may be obtained.

If the distance from the right gun to the aiming point is 2,000 yards, then the normal parallax of $P$ is 20/2, or 10, mils. If the aiming point is 800 mils off the normal, then, by the rule given above, $p=10\times0.7=7$ mils. *This parallax, or deflection difference, is positive when the aiming point is in front of the guns*—that is, when the deflection of the directing piece lies between 0 and 1,600 or between 4,800 and 6,400—*and is negative when P is in rear of the guns;* that is, when the deflection lies between 1,600 and 4,800. If $DF=5{,}600$ and $P$ is 2,000 yards away, then we easily determine that $p=7$. The deflections of the other pieces, assuming the right piece to be the directing piece, would be 5,607, 5,614, and 5,621, respectively, for the second, third, and fourth pieces.

(*c*) *The angle of site.*—In figure 3 let—

$B$ represent the observing or B. C. station;
$H'B\ H$, the horizontal plan through $B$;
$G$, the position of the directing gun;
$T$, the target;
$CGD$, the horizontal plane through $G$.

A vertical plane is assumed to be passed through the points *B*, *G* and *T* so as to give a profile view of the points and angle to be considered, although *B* is not necessarily in the same vertical plane as *G* and *T*.

The required *angle of site is the angle DGT in mils.*

The following paragraphs are quoted from Drill and Service Regulations for Field Artillery, 1916:

1208. The correct determination of the site is important in the resultant saving of time and ammunition and in the production of effect during fire for adjustment.

If the target is visible from the position of the guns, the site may be measured there. If the target is not visible from the position of the guns, the site may be measured at the observing station and transformed, if necessary, for use at the guns.

In open country the site may often be estimated with sufficient accuracy by referring the site of the target to a distant horizon the site of which is ordinarily 300.

1209. If the observing station and the guns are at approximately the same level, and at approximately the same distance from the target, the angle measured at the observing station is used without change at the guns.

1210. If the observing station is near the guns, but at a different level, the angle measured at the observing station is corrected, as follows: Estimate the difference of level in yards between observing station and guns; convert this difference into mils by dividing the number of thousands of yards in range to target and apply the result with the proper sign as a correction to the site of the target as measured at the observing station.

Example:

Site measured at observing station_____= 320 mils.
Estimated height of observing station above guns_= 30 yards.
Range of target (measured or estimated)_____=3,300 yards.

$$\text{Correction} = + \frac{30}{3} = +10 \text{ mils.}$$

Site at guns=320+10=330 mils.

1211. If the distances to the target from the observing station and the guns materially differ, the angle measured at the

observing station is corrected as follows: Determine the difference of level in yards between observing station and guns (Lg) and between observing station and target (Lt) by measuring the difference of level in mils, and converting this difference into yards by multiplying it by the number of thousands of yards in the distance from observing station to gun or target. Determine the difference of level in yards between gun and target by taking the sum of the foregoing differences if the observing station is at a level intermediate between the gun and target, by taking their difference if the observing station is above or below both the gun and target. The result is affected with a positive sign if the gun is below the target, with a negative sign if the gun is above the target; and it is then converted into mils by dividing by the number of thousands of yards in range. Applying this correction to 300 with the proper sign, the site at the gun is obtained.

The operations to be performed in effecting this transformation are set forth in detail in the Field Artillery Data Book.

**Example:**

Difference of level between observing station and gun, in mils.....(Sg) = −50
Difference of level between observing station and target, in mils.....(St) = +10
Distance from observing station to guns, in yards..(BG) = 1,200
Distance from observing station to target, in yards..(BT) = 4,500
Distance from guns to target, in yards.....(R) = 3,000

$$Lg = -50 \times 1.2 = -60$$

$$Lt = 10 \times 4.5 = 45$$

$$SI = 300 - \frac{Lg - Lt}{\frac{R}{1{,}000}} = \frac{-60-45}{3} = 300 + 35 = 335.$$

**1212.** Except where instruments are known to be in exact adjustment and ample time is available for calculating data, the site should be given in terms of the nearest multiple of five.

**1213.** If a very broad target sloping sharply at right angles to the plane of fire is to be attacked, it will generally be necessary, in order to secure exact adjustment of the fire, to vary

the sites by a common difference from one flank of the line of guns to the other. The value of this common difference may be determined by finding the difference in site between the two flanks of the target and dividing this difference by one less than the number of guns firing.

1214. A change of site does not change the range to the point of burst in air, but increasing the site raises the point of burst in time fire and lengthens the range in percussion fire, while decreasing the site lowers the point of burst in time fire and shortens the range in percussion fire.

Fig. 3.

(*d*) *The corrector.*—Paragraph 1217, Drill and Service Regulations for Field Artillery, 1916, relating to this subject, is as follows:

1217. The corrector setting should be such as will cause the mean point of burst to be about 3 mils high during fire for effect; about 1 mil high during fire for adjustment.

Due to variations in powders and fuze compositions and to atmospheric conditions, and to errors in the determination of the site, the most suitable corrector must be determined in each individual instance. Hence, at the commencement of fire, a trial corrector must be taken. This trial corrector is such as is suggested by previous experience with the ammunition in use and with local atmospheric conditions.

(*e*) *The range.*—Paragraphs 1222–1224, relating to the determination of the range, are as follows:

1222. The initial range may be determined by means of a range-finding instrument, by angle-measuring instruments, and a measured base, by the use of maps, by sound, by estimation, from auxiliary observers, from previous fire, or from other units. Every auxiliary means, time permitting, should be em-

ployed to assist in the measurement of the range, since its correct predetermination is essential to promptness of effect. In many cases an officer must rely upon his own estimate of the distance. By constant practice it is possible to gain the ability to estimate distances closely, and it is imperative that artillerymen should acquire this ability. In such training distances should be estimated to permanent features of the terrain rather than to targets known to have been arranged for service practice.

**1223.** If the objective is indistinct, or if the air is calm or gently blowing from the range toward the observer, so that the smoke of bursts is likely to obscure the target for an appreciable time, the first range used should be somewhat long.

**1224.** If fire over friendly troops near the target becomes necessary, the first range used should be surely long.

## Section 2. Pistol Practice.

### PRELIMINARY DRILLS; POSITION AND AIMING DRILLS.[1]

**135. Nomenclature and care of the weapon—Handling and precautions against accidents.**—The soldier will first be taught the nomenclature of those parts of the weapon necessary to an understanding of its action and use and the proper measures for its care and preservation. Ordnance pamphlet No. 1866 (description of the Colt's automatic pistol) contains full information on this subject and is furnished to organizations armed with this weapon.

Careless handling of the pistol is the cause of many accidents and results in broken parts of the mechanism. The following rules will, if followed, prevent much trouble of this character:

(*a*) On taking the *pistol* from the armrack or holster, take out the magazine and see that it is empty before replacing it; then draw back the slide and make sure that the piece is unloaded. Observe the same precaution after practice on the target range, and again before replacing the pistol in the holster or in the armrack.

(*b*) Neither load nor cock the weapon until the moment of firing.

(*c*) Always keep the pistol in the position of "Raise pistol," except when it is pointed at the target.

(*d*) Do not place the weapon on the ground where sand or earth can enter the bore or mechanism.

(*e*) Before loading the *pistol* draw back the slide and look through the bore to see that it is free from obstruction. When loading[1] *the pistol* for target practice place 5 cartridges in the magazine and insert the magazine in the handle; draw back the slide and insert the first cartridge in the chamber and carefully lower[2] the hammer fully down.

(*f*) Whenever the pistol is being *loaded* or *unloaded*, the muzzle *must be kept up.*

(*g*) Do not point the weapon in any direction where an accidental discharge might do harm.

(*h*) After loading do not cock the pistol until ready to fire.

(*i*) Keep the working parts properly lubricated.

**186. Position.**—Stand firmly on both feet, body perfectly balanced and erect and turned at such an angle as is most comfortable when the arm is extended toward the target; the feet far enough apart to insure firmness and steadiness of position (about 8 to 10 inches); weight of body borne equally upon both feet; right arm fully extended, left arm hanging naturally.

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[1] *To load pistol: Being at "Raise pistol"* (right hand grasping stock at the height of and 6 inches in front of the point of the right shoulder, forefinger alongside barrel, barrel to the rear and inclined forward about 30°).

Without deranging position of the hand, rotate the pistol so the sights move to the left, the barrel pointing to the right front and up.

With the thumb and forefinger of the *left* hand (thumb to the right), grasp the slide and pull it toward the body until it stops and then release it. The pistol is thus loaded, and the hammer at full cock.

If the pistol is to be kept in the hand and not to be fired at once, engage the safety lock with the thumb of the *right* hand.

If the pistol is to be carried in the holster, remove safety lock, if on, and lower the hammer *fully* down.

[2] *To lower the hammer: Being at the loading position at full cock.*

I. Firmly seat thumb of *right* hand on the hammer; insert forefinger inside trigger guard.

II. With *thumb* of *left* hand exert a momentary pressure on the grip-safety to release hammer from sear.

III. At the same instant exert pressure on the trigger and carefully and slowly lower the hammer fully down.

IV. Remove finger from trigger.

V. Insert pistol in holster.

(Caution:) The pistol must *never* be placed in the holster until hammer *is fully down.*

REMARKS.—The right arm may be slightly bent, although the difficulty of holding the pistol uniformly and of keeping it as well as the forearm in the same vertical plane makes this objectionable.

137. **The grip.**—Grasp the stock as high as possible with the thumb and last three fingers, the forefinger alongside the trigger guard, the thumb extended along the stock. The barrel, hand, and forearm should be as nearly in one line as possible when the weapon is pointed toward the target. The grasp should not be so tight as to cause tremors of the hand or arm to be communicated to the weapon, but should be firm enough to avoid losing the grip when the recoil takes place.

REMARKS.—The force of recoil of the pistol is exerted in a line above the hand which grasps the stock. The lower the stock is grasped the greater will be the movement or "jump" of the muzzle caused by the recoil. This not only results in a severe strain upon the wrist, but in loss of accuracy.

If the hand be placed so that the grasp is on one side of the stock, the recoil will cause a rotary movement of the weapon toward the opposite side.

The releasing of the sear causes a slight movement of the muzzle, generally to the left. The position of the thumb along the stock overcomes much of this movement. The soldier should be encouraged to practice this method of holding until it becomes natural.

To do uniform shooting the weapon must be held with exactly the same grip for each shot. Not only must the hand grasp the stock at the same point for each shot, but the tension of the grip must be uniform.

138. (*a*) **The trigger squeeze.**—The trigger must be squeezed in the same manner as in rifle firing. The pressure of the forefinger on the trigger should be steadily increased and should be straight back, not sideways. The pressure should continue to that point beyond which the slightest movement will release the sear. Then, when the aim is true, the additional pressure is applied and the pistol fired.

Only by much practice can the soldier become familiar with the trigger squeeze. This is essential to accurate shooting. It is the most important detail to master in pistol shooting.

**139. Aiming.**—Except when delivering rapid or quick fire, the rear and front sights of the pistol are used in the same manner as the rifle sights. The normal sight is habitually used (see Pl. VI), and the line of sight is directed upon a point just under the bull's-eye at "6 o'clock." The front sight must be seen through the middle of the rear-sight notch, the top being on a line with the top of the notch. Care must be taken not to cant the pistol to either side.

If the principles of aiming have not been taught, the soldier's instruction will begin with sighting drills.

To construct a sighting rest for the pistol (see Pl. VI) take a piece of wood about 10 inches long, 1¼ inches wide, and ⅞ inch thick. Shape one end so that it will fit snugly in the handle of the pistol when the magazine has been removed. Screw or nail this stick to the top of a post or other object at such an angle that the pistol when placed on the stick will be approximately horizontal. A suitable sighting rest for the revolver may be easily improvised.

**140. (*a*) How to cock the pistol.**—The pistol should be cocked by the thumb of the right hand and with the least possible derangement of the grip. The forefinger should be clear of the trigger when cocking the pistol. Some men have difficulty at first in cocking the pistol with the right thumb. This can be overcome by a little practice. Jerking the pistol forward while holding the thumb on the hammer will not be permitted.

## SIGHTING DRILLS.

**13. Value.**—The value of the sighting drills and the position and aiming drills can not be too strongly emphasized. By means of them the fundamental principles of shooting may be inculcated before the soldier fires a shot.

**14. To whom given.**—The sighting drills will be given to all soldiers who have not qualified in the preceding target year.

**15. Purposes.**—(*a*) To show how to align the sights properly on the mark; (*b*) to discover and demonstrate errors in sighting; (*c*) to teach uniformity in sighting.

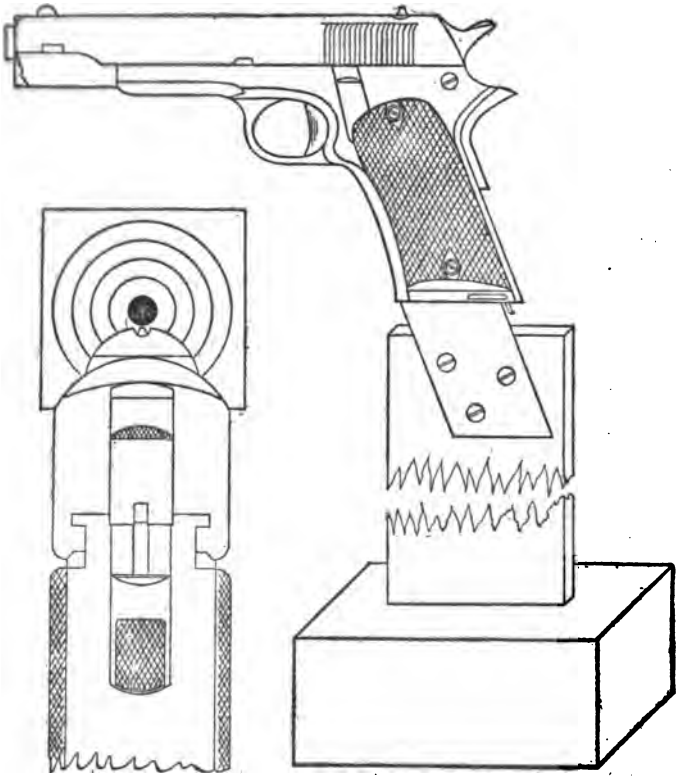

PLATE VI.

FIRST SIGHTING EXERCISE.

**22.** Using illustrations, describe the normal sight.

SECOND SIGHTING EXERCISE.

**25.** Using the sighting rest for the pistol, require each man to direct the marker to move the disk until the pistol is directed on the bull's-eye with the normal sight and command "Hold." The instructor will verify this line of sight. Errors, if any, will be explained to the soldier and another trial made.

Soldiers will sometimes be found who do not know how to place the eye in the line of sight; they often look over or along one side of the notch of the rear sight and believe that they are aiming through the notch because they see it at the same time that they do the front sight. Some men in sighting will look at the front sight and not at the object. As this often occasions a blur, which prevents the object from being distinctly seen and increases both the difficulties and inaccuracies of sighting, it should be corrected.

THIRD SIGHTING EXERCISE.

**27.** Using the sighting rest for the pistol, require each man to direct the marker to move the disk until the pistol is directed on the bull's-eye with the normal sight and command "Mark"; then, being careful not to move the pistol or sights, repeat the operation until three marks have been made.

(*a*) **The triangle of sighting.**—Join the three points determined as above by straight lines, mark with the soldier's name, and call his attention to the triangle thus formed. The shape and size of this triangle will indicate the nature of the variations made in aiming.

(*b*) **Abnormal shape, causes.**—If the triangle is obtuse angled, with its sides approaching the vertical (see fig. 2, Pl. IV), the soldier has not taken a uniform amount of front sight. If the sides of the triangle are more nearly horizontal (see fig. 3, Pl. IV) the errors were probably caused by not looking through the middle of the notch or not over the top of the front sight. If any

one of the sides of the triangle is longer than one-half inch, the instructor directs the exercise to be repeated, verifying each sight and calling the soldier's attention to his errors. The instructor will explain that the sighting gains in regularity as the triangle becomes smaller.

(*c*) Verifying the triangle.—If the sides of the triangle are so small as to indicate regularity in sighting, the instructor will mark the center of the triangle and then place the center of the bull's-eye on this mark. The instructor will then examine the position of the bull's-eye with reference to the line of sight. If the bull's-eye is properly placed with reference to the line of

FIG. 2.

FIG. 3.

PLATE IV.

sight, the soldier aims correctly and with uniformity. If not so placed, he aims in a regular manner but with a constant error.

(*d*) Causes of errors.—If the bull's-eye is directly above its proper position, the soldier has taken in aiming too little front sight, or if directly below, too much front sight. If directly to the right or left, the soldier has not sighted through the center of the rear sight notch and over the top of the front sight. If to the right, he has probably either sighted along the left of the rear sight notch or the right side of the front sight, or has committed both of these errors. If the bull's-eye is too far to the left, he has probably sighted along the right of the rear sight notch or to the left of the front sight, or has combined both of these errors.

If the bull's-eye is placed with reference to its proper position diagonally above and to the right, the soldier has probably combined the errors which placed it too high and too far to the right. Any other diagonal position would be produced by a similar combination of vertical and horizontal errors.

As the errors thus shown are committed when the pistol is fixed in position, while that of the bull's-eye or target is altered, the effect will be directly opposite to the changes in the location of a hit in actual fire, occasioned by the same errors, when the target will be fixed and the pistol moved in aiming.

After the above instruction has been given to one man, the line of sight will be slightly changed by moving the sighting rest and the exercises similarly repeated with the other men in the squad.

**141. Position and aiming drills.**—For this instruction the squad will be formed with an interval of 1 pace between files. Black pasters to simulate bull's-eyes will be pasted opposite each man on the barrack or other wall, from which the squad is 10 paces distant.

The squad being formed as described above, the instructor gives the command, 1. *Raise.* 2. *Pistol,* and cautions, "*Position and Aiming Drill.*" The men take the positions described, except that the pistol is held at "Raise pistol."

The instructor cautions, "Trigger squeeze exercise." At the command READY, cock the weapon as described in paragraph 140. At the command, 1. *Squad;* 2. FIRE, slowly extend the arm until it is nearly horizontal, the pistol directed at a point about 6 inches below the bull's-eye. At the same time put the forefinger inside the trigger guard and gradually "feel" the trigger. Inhale enough air to comfortably fill the lungs and gradually raise the piece until the line of sight is directed at the point of aim, i. e., just below the bull's-eye at 6 o'clock. While the sights are directed upon the mark, gradually increase the pressure on the trigger until it reaches that point where the slightest additional pressure will release the sear. Then, when the aim is true, the additional pressure necessary to fire the piece is given so smoothly as not to derange the alignment of the sights. The weapon will be held on the mark [illegible] the ham-

mer falls and the soldier will observe what effect, if any, the squeezing of the trigger has had on his aim.

It is impossible to hold the arm perfectly still, but each time the line of sight is directed on the point of aim a slight additional pressure is applied to the trigger until the piece is finally discharged at one of the moments when the sights are correctly aligned upon the mark.

When the soldier has become proficient in taking the proper position, the trigger squeeze should be executed at will. The instructor prefaces the preparatory command by "At will" and gives the command HALT at the conclusion of the exercise, when the soldier will return to the position of "Raise pistol."

At first this exercise should be executed with deliberation, but gradually the soldier will be taught to catch the aim quickly and to lose no time in beginning the trigger squeeze and bringing it to the point where the slightest additional pressure will release the sear.

REMARKS.—In service few opportunities will be offered for slow-aimed fire with the pistol or revolver, although use will be made of the weapon under circumstances when accurate pointing and rapid manipulation are of vital importance.

In delivering a rapid fire, the soldier must keep his eyes fixed upon the mark and, after each shot, begin a steadily increasing pressure on the trigger, trying at the same time to get the sights as nearly on the mark as possible before the hammer again falls. The great difficulty in quick firing with the pistol lies in the fact that when the front sight is brought upon the mark, the rear sight is often found to be outside the line joining the eye with the mark. This tendency to hold the pistol obliquely can be overcome only by a uniform manner of holding and pointing. This uniformity is to be attained only by acquiring a grip which can be taken with certainty each time the weapon is fired. It is this circumstance which makes the position and aiming drills so important. The soldier should constantly practice pointing the pistol until he acquires the ability to direct it on the mark in the briefest interval of time and practically without the aid of sights.

**142. To draw and fire quickly—Snap shooting.**—With the squad formed as described in paragraph 141 except that the

pistol is in the holster and the flap, if any, buttoned, the instructor cautions "Quick-fire exercise." And gives the command, 1. SQUAD; 2. Fire. At this command, each soldier, keeping his eye on the target, quickly draws his pistol, cocks it as in paragraph 140, thrusts it toward the target, squeezes the trigger and at the instant the weapon is brought in line with the eye and the objective, increases the pressure, releasing the sear. To enable the soldier to note errors in pointing, the weapon will be momentarily held in position after the fall of the hammer. Efforts at deliberate aiming in this exercise must be discouraged.

Remarks under paragraph 141 are specially applicable also to this type of fire. When the soldier has become proficient in the details of this exercise, it should be repeated at will; the instructor cautions "At will; quick-fire exercise." The exercise should be practiced until the mind, the eye, and trigger finger act in unison.

### PISTOL RANGE PRACTICE.

**147. General description.**—This practice includes the instruction of the soldier in firing with the service pistol. The general scheme is as follows:

| | | Number of shots. |
|---|---|---|
| Instruction practice | Slow fire, at 15 and 25 yards, minimum of 2 scores (1 at each range). | 10 |
| | Rapid fire, at 15 and 25 yards, minimum of 4 scores (2 at each range). | 20 |
| | Quick fire, at 15 and 25 yards, minimum of 4 scores (2 at each range) | 20 |
| Record practice | Rapid fire, at 25 yards, 2 scores | 10 |
| | Quick fire, at 15 and 25 yards, 2 scores at each range | 20 |
| Expert test | Rapid fire, at 50 yards, 1 score | 5 |
| | Quick fire, at 15 and 25 yards, 1 score at each range | 10 |
| Total | | 95 |

A score consists of five consecutive shots. All enlisted men of Field Artillery will fire the course.

151. Instruction practice.—In order to insure uniformity of instruction the order of procedure and a minimum number of shots are prescribed, but a certain percentage for proficiency at each stage is a requisite for advancement to the next succeeding stage. If this percentage is not attained, the judgment of the organization commander dictates the type of instruction which

he deems best suited to the individual case. In order that the expenditure of ammunition may be fully under the control of the organization commander he may advance men who have fired during a preceding season without requiring them to fire the full number of shots prescribed as a minimum for any type of fire in instruction practice, provided that they fire at least one-half the minimum, and in so doing make a percentage at least as high as that required for advancement to the next succeeding stage. In the exercise of this privilege, however, the organization commander should guard against depriving the soldier of needed practice.

**152. Record practice.**—In all record practice scores will be kept and the record of firing prepared as prescribed for the rifle. The number of shots to be fired in record practice has been made no greater than barely sufficient to demonstrate the soldier's average shooting ability.

**153.** (*a*) **Scoring in rapid and quick fire.**—In timed, rapid, or quick fire, the scorer does not announce the name of the firer after the result of each shot has been signaled. As soon as the value of each hit on the target is signaled, it is announced; the number of misses, if any, is announced; the score is then entered; and finally the name of the firer with his total score is announced and the latter recorded.

(*b*) **Firing on wrong target.**—In the case of two men firing in timed, rapid, or quick fire on the same target the resulting score will be rejected, the soldier at fault being credited only with such hits as he may have made on his own target, the other soldier repeating his score.

(*c*) **Other mishaps.**—Unfired shots count as misses. In case of defective cartridges or disabled weapon the entire score is not repeated, but the soldier fires only the necessary number of shots to complete the then unfinished score, and where the time element enters the ratio between the full time per score and the time to be allowed will equal the ratio existing between a full score and the number of shots to be fired. For each shot fired before the commencement or after the close of the time limit the maximum possible per shot at the particular type of target being fired at will be deducted from the score. Prior to

commencing range practice the instructor should thoroughly drill his command in the manipulation of the pistol.

**154. Expert test.**—All who in record practice have made the required percentage of the aggregate score possible in either course will fire the expert test prescribed for that course. If at any stage of the test the soldier's score is such that qualification is no longer possible, the test will be discontinued. Should the soldier make the required number of points before firing the full number of shots, he will not be required to continue firing.

**155. Order of procedure.**—Pistol firing commences with instruction practice in each course, and this practice is carried to completion for each soldier before proceeding to the next succeeding stage of record practice in the course being pursued. When instruction practice is completed, the soldier proceeds to record practice in the course he is required to fire, and follows this course to completion in accordance with the tables and regulations hereinafter laid down. The soldier may be thus advanced to record practice immediately after he has completed instruction practice without waiting for others less advanced. While engaged in record practice the soldier will do no other firing.

**156. General remarks.**—With the idea of inculcating in the soldier from the beginning the habit of firing by pointing, as distinguished from deliberate aiming, firing at the longer ranges has been removed from both courses and quick firing at bobbing targets has been added. Slow fire has been held at the lowest possible number of shots consistent with insuring safe handling of the weapon and a knowledge of its shooting qualities.

**157. Preliminary instruction.**—The importance of preliminary exercises can not be overestimated, and a reasonable amount of pointing and snapping indulged in prior to range practice will be amply repaid by the results obtained when firing with ball cartridges.

**167. Tabulation.**—The tables relate to the three divisions of the Dismounted Course and in the order to be followed in range practice, viz: Instruction Practice, Record Practice, and Expert Test. Each table is followed by regulations applicable.

**168. Instruction practice:**

| Slow fire. | | Rapid fire. | |
|---|---|---|---|
| Target L. | | Target L. | |
| 15 yards. | 25 yards. | 15 yards. | 25 yards. |
| Scores, minimum of 1. Time limit, none. | Scores, minimum of 1. Time limit, none. | Scores, minimum of 2. Time, 20 seconds per score. | Scores, minimum of 2. Time, 20 seconds per score. |

| Quick fire. | |
|---|---|
| Target E—Bobbing. | |
| 15 yards. | 25 yards. |
| Scores, minimum of 2. Time, 3 seconds per shot. | Scores, minimum of 2. Time, 4 seconds per shot. |

**Time.**—Intervals of time are measured from the last note of the signal or the last word of the command "Commence firing" to the last note or word of "Cease firing." Commands will not be unduly prolonged.

**169. Procedure.**—The course will be fired in the order set forth in the table, beginning at the shorter range and completing each type of fire before proceeding to the next, in the following order: Slow fire, rapid fire, and quick fire, with the proviso that 50 per cent of a possible score for any type of fire at any range is a necessary requisite for advancement to the next succeeding step in the course.

Should the soldier fail to make the 50 per cent necessary for advancement, he will be required to repeat the type of firing at the range at which he failed.

If upon the second trial the soldier fails to make 50 per cent of a possible score, he will not be advanced to the next stage, but he may be required to continue such instruction practice as the judgment of the organization commander dictates and the state of the ammunition allowance permits.

No soldier will be advanced to record practice, dismounted course, who, in instruction practice, has failed to make 60 per cent of the aggregate possible score.

**170. Slow fire.**—The target is the target "L" bull's-eye and is used so that the kind and magnitude of the errors committed by the firer become at once evident to him. Abundant time is permitted in the firing to enable proper explanation of the causes and the remedies for such errors to be pointed out. It is designed as the elementary phase of instruction in the proper manipulation of the weapon and in determining and correcting the personal errors of the firer.

**171. Rapid and quick fire.**—Targets: Target L for rapid; bobbing target E for quick fire.

**172. Procedure:** (*a*) **In rapid fire.**—Time is taken at the firing stand by sand glass or watch. The target being up, the soldier stands with weapon at "Raise pistol." The revolver or pistol is loaded with five cartridges, as prescribed in paragraph 135 (*e*). The command "Commence firing" is given and the soldier fires five shots within the prescribed limits of time, at the end of which the command "Cease firing" will have been given.

(*b*) **In quick fire.**—The target is operated as a bobbing target. Three to five seconds after notice is received at the pit that all is ready at the firing point the target is alternately exposed to and turned from view of the firing point, exposures being of three to four seconds duration, depending upon the range, with an interval three to five seconds between exposures. The soldier stands at the firing point, pistol loaded with five cartridges, as prescribed in paragraph 135 (*e*), weapon in holster, flap, if any, buttoned. Upon the first exposure of the target, the soldier draws and fires, or attempts to fire, one shot

at the target before it disappears. The weapon, having been drawn to fire the first shot, remains in the hand until five shots have been fired.

**173. Record practice:**

| Rapid fire. | Quick fire. | |
|---|---|---|
| Target L. | Target E—Bobbing. | |
| 25 yards. | 15 yards. | 25 yards. |
| Scores, 2. Time limit, 20 seconds for each score. | Scores, 2. Time, 3 seconds per shot. | Scores, 2. Time, 4 seconds per shot. |

All who make 80 per cent of the aggregate possible score will fire the expert test. (Par. 174.)

**174. Expert test:**

| Rapid fire. | Quick fire. | |
|---|---|---|
| Target L. | Target E—Bobbing. | |
| 50 yards. | 15 yards. | 25 yards. |
| Scores, 1. Time limit, 30 seconds per score. | Scores, 1. Time, 3 seconds per shot. | Scores, 1. Time, 4 seconds per shot. |

Aggregate possible, 60; necessary to qualify, 50.

**175. Classification.**—All who are required or authorized to fire and who are borne on the rolls of the organization during any part of the practice season, or who are attached for practice by proper authority, will be classified, or rated as unclassified, according as they have met or failed to meet the requirements of classification.

Classification, in the absence of requalification, will terminate one year from the date upon which the individual qualified.

**Requirements.**—(*a*) All who in record practice make at least 80 per cent of the aggregate possible score will be classified as first-class men; (*b*) those who fail to qualify as first-class men, but who make not less than 60 per cent of the aggregate possible score, will be classified as second-class men; (*c*) all who fail as second-class men and those who for any reason did not fire the course and are not otherwise classified, will be rated as unqualified; (*d*) all first-class men who, in firing the expert course, make over 83 per cent of the aggregate possible score in that course, will be classified as expert pistol shots.

INSIGNIA.

**245. Classes.**—To each officer and soldier qualifying for the first time as expert rifleman, sharpshooter, marksman, expert pistol shot, and first-class pistol shot certain insignia, indicating their skill in marksmanship, will be issued. In case of loss or damage new issue may be made, as provided for in paragraph 245.

**248. Expert pistol shot's badge.**—To the expert pistol shot a silver badge will be issued, which may be worn for one year from the date of qualification, and thereafter for one year from the date of each subsequent qualification.

**249. First-class pistol shot's pin.**—To the first-class pistol shot will be issued a pin, which may be worn for one year from the date of qualification, and thereafter for one year from the date of each subsequent qualification.

**250. Duplicates.**—These insignia will become the property of the persons to whom issued. If they are lost by the owner or in transmission to him, or if they become unsightly from long wear, they may be replaced without cost to the owner. But in all cases the official certificate of the battery commander to the effect that he has investigated the circumstances of the loss or damage and finds that no negligence can be imputed to the soldier will be required as evidence upon which to make the new issues. In case of loss claim must be made within 60 days from date of loss. Duplicates, if desired for use on separate coats, will be sold to those entitled to wear the insignia.

PISTOL TARGETS.

**260. Target L.**—A rectangle 6 feet high and 4 feet wide, with black circular bull's-eye 5 inches in diameter. Value of hit therein, 10. Seven rings with diameters as follows:

| | Value of hit. |
|---|---|
| (1) 8½ inches | 9 |
| (2) 12 inches | 8 |
| (3) 15½ inches | 7 |
| (4) 19 inches | 6 |
| (5) 22½ inches | 5 |
| (6) 26 inches | 4 |
| (7) 46 inches | 3 |
| (8) Outer, remainder of target | 2 |

**259. Target E.**—A drab silhouette about the height of a soldier in the kneeling position, made of bookbinders' board or other similar material. Hits on target count 1, and any shot cutting the edge of a silhouette is a hit.

**Bobbing target.**—Target E, arranged to be fully exposed to firer for limited time. Edge of target toward firer when target is not exposed.

### Section 3. Subcaliber Practice.

**1436.** Subcaliber ammunition will be used for perfecting units in fire discipline and for practicing officers and men in all the mechanisms of fire. To attain these ends, practice will be held on terrain where the strike of the bullets can be plainly seen from the guns.

**1437.** By reducing dimensions of targets, intervals, distances, and ranges to one-tenth of those met in service, very realistic simulation of service conditions may often be obtained and opportunity afforded for practice in using instruments and field glasses and in computing firing data under varied conditions.

### Section 4. Service Practice.

The successive steps to be followed in training units for service practice and the manner of carrying out service practice are explained in detail in Drill and Service Regulations. (See pars. 1438–1463.)

## CHAPTER IV.

# EXTRACTS FROM MANUAL OF INTERIOR GUARD DUTY.

UNITED STATES ARMY, 1914.

[The numbers refer to paragraphs in the Manual.]

### Section 1. Introduction.

1. Guards may be divided into four classes: Exterior guards, interior guards, military police, and provost guards.

2. Exterior guards are used only in time of war. They belong to the domain of tactics and are treated of in the Field Service Regulations and in the drill regulations of the different arms of the service.

The purpose of exterior guards is to prevent surprise, to delay attack, and otherwise to provide for the security of the main body.

On the march they take the form of advance guards, rear guards, and flank guards. At a halt they consist of outposts.

3. Interior guards are used in camp or garrison to preserve order, protect property, and to enforce police regulations. In time of war such sentinels of an interior guard as may be necessary are placed close in or about a camp, and normally there is an exterior guard farther out consisting of outposts. In time of peace the interior guard is the only guard in a camp or garrison.

4. Military police differ somewhat from either of these classes, (See Field Service Regulations.) They are used in time of war to guard prisoners, to arrest stragglers and deserters, and

to maintain order and enforce police regulations in the rear of armies, along lines of communication, and in the vicinity of large camps.

5. Provost guards are used in the absence of military police, generally in conjunction with the civil authorities at or near large posts or encampments, to preserve order among soldiers beyond the interior guard.

### Section 2. Classification of Interior Guards.

6. The various elements of an interior guard classified according to their particular purposes and the manner in which they perform their duties are as follows:

(*a*) The main guard.

(*b*) Special guards: Stable guards, park guards, prisoner guards, herd guards, train guards, boat guards, watchmen, etc.

### Section 3. Details and Rosters.

7. At every military post, and in every regiment or separate command in the field, an interior guard will be detailed and duly mounted.

It will consist of such number of officers and enlisted men as the commanding officer may deem necessary, and will be commanded by the senior officer or noncommissioned officer therewith, under the supervision of the officer of the day or other officer detailed by the commanding officer.

8. The system of sentinels on fixed posts is of value in discipline and training because of the direct individual responsibility which is imposed and required to be discharged in a definite and precise manner. While the desirability of this type of duty is recognized, it should only be put in practice to an extent sufficient to insure thorough instruction in this method of performing guard duty and should not be the routine method of its performance. The usual guard duty will be performed by watchmen, patrols, or such method as, in the opinion of the commanding officer, may best secure results under the particular local conditions.

9. At posts where there are less than three companies the main guard and special guards may all be furnished by one

company or by details from each company. It is directed that whenever possible such guards shall be furnished by a single company, for the reason that if guard details are taken from each organization at a post of two companies, troops, or batteries it will result in both being so reduced as to seriously interfere with drill and instruction, whereas if details are taken from only one, the other is available for instruction at full strength.

Where there are three or more companies, the main guard will, if practicable, be furnished by a single company, and, as far as practicable, the same organization will supply all details for that day for special guard, overseer, and fatigue duty. In this case the officer of the day and the officers of the guard, if there are any, will, if practicable, be from the company furnishing the guard.

**10.** At a post or camp where the headquarters of more than one regiment are stationed, or in the case of a small brigade in the field, if but one guard be necessary for the whole command, the details will be made from the headquarters of the command.

If formal guard mounting is to be held, the adjutant, sergeant major, and band to attend guard mounting will be designated by the commanding officer.

**11.** When a single organization furnishes the guard, a roster of organizations will be kept by the sergeant major under the supervision of the adjutant. (See Appendix B.)

**12.** When the guard is detailed from several organizations, rosters will be kept by the adjutant, of officers of the day and officers of the guard by name; by the sergeant major under the supervision of the adjutant, of sergeants, corporals, musicians, and privates of the guard by number per organization; and by first sergeants, of sergeants, corporals, musicians, and privates by name. (See Appendix A.)

**13.** When organizations furnish their own stable, or stable and park guards, credit will be given each for the number of enlisted men so furnished as though they had been detailed for main guard.

**14.** Special guards, other than stable guards, will be credited the same as for main guard with fatigue

duty, carried on special duty, or credited as the commanding officer may direct. (Pars. 6, 221, 247, and 300.)

15. Captains will supervise the keeping of company rosters and see that all duties performed are duly credited. (See pars. 355–364, A. R., for rules governing rosters, and Form 342, A. G. O., for instructions as to how rosters should be kept.)

16. There will be an officer of the day with each guard, unless in the opinion of the commanding officer the guard is so small that his services are not needed. In this case an officer will be detailed to supervise the command and instruction of the guard for such period as the commanding officer may direct.

17. When more than one guard is required for a command, a field officer of the day will be detailed, who will receive his orders from the brigade or division commander, as the latter may direct. When necessary captains may be placed on the roster for field officer of the day.

18. The detail of officers of the guard will be limited to the necessities of the service and efficient instruction; inexperienced officers may be detailed as supernumerary officers of the guard for purposes of instruction.

19. Officers serving on staff departments are, in the discretion of the commanding officer, exempt from guard duty.

20. Guard details will, if practicable, be posted or published the day preceding the beginning of the tour, and officers notified personally by a written order at the same time.

21. The strength of guards and the number of consecutive days for which an organization furnishes the guard will be so regulated as to insure privates of the main guard an interval of not less than five days between tours.

When this is not otherwise practicable, extra and special duty men will be detailed for night guard duty, still performing their daily duties. When so detailed a roster will be kept by the adjutant showing the duty performed by them.

22. The members of main guards and stable and park guards will habitually be relieved every 24 hours. The length of the tour of enlisted men detailed as special guards, other than stable or park guards, will be so regulated as to permit of these men being held accountable for a strict performance of their duty.

**23.** Should the officer of the day be notified that men are required to fill vacancies in the guard, he will cause them to be supplied from the organization to which the guard belongs. If none are available in that organization, the adjutant will be notified and will cause them to be supplied from the organization that is next for guard. (Par. **63.**)

**24.** The adjutant will have posted on the bulletin board at his office all data needed by company commanders in making details from their companies.

At first sergeant's call, first sergeants will go to headquarters and take from the bulletin board all data necessary for making the details required from their companies; these details will be made from their company rosters.

**25.** In order to give ample notice, first sergeants will, when practicable, publish at retreat and post on the company bulletin board all details made from the company for duties to be performed.

**26.** Where rosters are required to be kept by this manual, all details will be made by roster.

### Section 4. Commander of the Guard.

**41.** The commander of the guard is responsible for the instruction and discipline of the guard. He will see that all of its members are correctly instructed in their orders and duties and that they understand and properly perforin them. He will visit each relief at least once while it is on post, and at least one of these visits will be made between 12 o'clock midnight and daylight.

**42.** He receives and obeys the orders of the commanding officer and the officer of the day, and reports to the latter without delay all orders to the guard not received from the officer of the day; he transmits to his successor all material instructions and information relating to his duties.

**43.** He is responsible under the officer of the day for the general safety of the post or camp as soon as the old guard marches away from the guardhouse. In case of emergency, while both guards are at the guardhouse, the senior commander of the two guards will be responsible that the proper action is taken.

44. Officers of the guard will remain constantly with their guards, except while visiting patrols or necessarily engaged elsewhere in the performance of their duties. The commanding officer will allow a reasonable time for meals.

45. A commander of a guard leaving his post for any purpose will inform the next in command of his destination and probable time of return.

46. Except in emergencies, the commander of the guard may divide the night with the next in command, but retains his responsibility; the one on watch must be constantly on the alert.

47. When any alarm is raised in camp or garrison, the guard will be informed immediately. (Par. 234.) If the case be serious, the proper call will be sounded, and the commander of the guard will cause the commanding officer and the officer of the day to be at once notified.

48. If a sentinel calls: "The guard," the commander of the guard will at once send a patrol to the sentinel's post. If the danger be great, in which case the sentinel will discharge his piece, the patrol will be as strong as possible.

49. When practicable, there should always be an officer or noncommissioned officer and two privates of the guard at the guardhouse in addition to the sentinels there on post.

50. Between reveille and retreat, when the guard had been turned out for any person entitled to the compliment (see pars. 222 and 224), the commander of the guard, if an officer, will receive the report of the sergeant, returning the salute of the latter with the right hand. He will then draw his saber and place himself two paces in front of the center of the guard. When the person for whom the guard has been turned out approaches, he faces his guard and commands: 1. **Present**, 2. **ARMS**; faces to the front and salutes. When his salute is acknowledged, he resumes the carry, faces about, and commands: 1. **Order**, 2. **ARMS**; and faces to the front.

If it be an officer entitled to inspect the guard, after saluting and before bringing his guard to an order, the officer of the guard reports: "**Sir, all present or accounted for**"; or "**Sir, (so-and-so) is absent**"; or, if the roll call has been omitted: "**Sir, the guard is formed,**" except that at guard mounting the com-

manders of the guards present their guards and salute without making any report.

Between retreat and reveille the commander of the guard salutes and reports but does not bring the guard to a present.

**51.** To those entitled to have the guard turned out but not entitled to inspect it, no report will be made; nor will a report be made to any officer unless he halts in front of the guard.

**52.** When a guard commanded by a noncommissioned officer is turned out as a compliment or for inspection, the noncommissioned officer, standing at a right shoulder on the right of the right guide, commands: 1. **Present,** 2. **ARMS.** He then executes the rifle salute. If a report be also required, he will, after saluting, and before bringing his guard to an order, report as prescribed for the officer of the guard. (Par. **50.**)

**53.** When a guard is in line, not under inspection, and commanded by an officer, the commander of the guard salutes his regimental, battalion, and company commander, by bringing the guard to attention and saluting in person.

For all other officers, excepting those entitled to the compliment from a guard (par. **224**), the commander of the guard salutes in person, but does not bring the guard to attention.

When commanded by a noncommissioned officer, the guard is brought to attention in either case, and the noncommissioned officer salutes.

The commander of a guard exchanges salutes with the commanders of all other bodies of troops; the guard is brought to attention during the exchange.

"Present arms" is executed by a guard only when it has turned out for inspection or as a compliment, and at the ceremonies of guard mounting and relieving the old guard.

**54.** In marching a guard or a detachment of a guard the principles of paragraph **53** apply. "Eyes right" is executed only in the ceremonies of guard mounting and relieving the old guard.

**55.** If a person entitled to the compliment, or the regimental, battalion, or company commander, passes in rear of a guard, neither the compliment nor the salute is given, but the guard is brought to attention while such person is opposite the post of the commander.

After any person has received or declined the compliment, or received the salute from the commander of the guard, official recognition of his presence thereafter while he remains in the vicinity will be taken by bringing the guard to attention.

56. The commander of the guard will inspect the guard at reveille and retreat, and at such other times as may be necessary, to assure himself that the men are in proper condition to perform their duties and that their arms and equipments are in proper condition. For inspection by other officers, he prepares the guard in each case as directed by the inspecting officer.

57. The guard will not be paraded during ceremonies unless directed by the commanding officer.

58. At all formations members of the guard or reliefs will execute inspection arms as prescribed in the drill regulations of their arm.

59. The commander of the guard will see that all sentinels are habitually relieved every two hours, unless the weather or other cause makes it necessary that it be done at shorter or longer intervals, as directed by the commanding officer.

60. He will question his noncommissioned officers and sentinels relative to the instructions they may have received from the old guard; he will see that patrols and visits of inspection are made as directed by the officer of the day.

61. He will see that the special orders for each post and member of the guard, either written or printed, are posted in the guardhouse and, if practicable, in the sentry box or other sheltered place to which the member of the guard has constant access.

62. He will see that the proper calls are sounded at the hours appointed by the commanding officer.

63. Should a member of the guard be taken sick, or be arrested, or desert, or leave his guard, he will at once notify the officer of the day. (Par. 23.)

64. He will, when the countersign is used (pars. 210 to 216), communicate it to the noncommissioned officers of the guard and see that it is duly communicated to the sentinels before the hour for challenging; the countersign will not be given to sentinels posted at the guardhouse.

65. He will have the details for hoisting the flag at reveille and lowering it at retreat, and for firing the reveille and retreat gun, made in time for the proper performance of these duties. (See pars. 338, 344, 345, and 346.) He will see that the flags are kept in the best condition possible, and that they are never handled except in the proper performance of duty.

66. He may permit members of the guard while at the guardhouse to remove their head dress, overcoats, and gloves; if they leave the guardhouse for any purpose whatever, he will require that they be properly equipped and armed according to the character of the service in which engaged, or as directed by the commanding officer.

67. He will enter in the guard report a report of his tour of duty and, on the completion of his tour, will present it to the officer of the day. He will transmit with his report all passes turned in at the post of the guard.

68. Whenever a prisoner is sent to the guardhouse or guard tent for confinement, he will cause him to be searched, and will, without unnecessary delay, report the case to the officer of the day.

69. Under war conditions, if anyone is to be passed out of camp at night, he will be sent to the commander of the guard who will have him passed beyond the sentinels.

70. The commander of the guard will detain at the guardhouse all suspicious characters, or parties attempting to pass a sentinel's post without authority, reporting his action to the officer of the day, to whom persons so arrested will be sent, if necessary.

71. He will inspect the guardrooms and cells, and the irons of such prisoners as may be ironed, at least once during his tour, and at such other times as he may deem necessary.

72. He will cause the corporals of the old and new reliefs to verify together, immediately before each relief goes on post, the number of prisoners who should then properly be at the guardhouse.

73. He will see that the sentences of prisoners under his charge are executed strictly in accordance with the action of the reviewing authority.

**74.** When no special prisoner guard has been detailed (par. **300**), he will, as far as practicable, assign as guards over working parties of prisoners sentinels from posts guarded at night only.

**75.** The commander of the guard will inspect all meals sent to the guardhouse and see that the quantity and quality of food are in accordance with regulations.

**76.** At guard mounting he will report to the old officer of the day all cases of prisoners whose terms of sentence expire on that day, and also all cases of prisoners concerning whom no statement of charges has been received. (See par. **241.**)

**77.** The commander of the guard is responsible for the security of the prisoners under the charge of his guard; he becomes responsible for them after their number has been verified and they have been turned over to the custody of his guard by the old guard or by the prisoner guard or overseers.

**78.** The prisoners will be verified and turned over to the new guard without parading them, unless the commanding officer or the officer of the day shall direct otherwise.

**79.** To receive the prisoners at the guardhouse when they have been paraded and after they have been verified by the officers of the day, the commander of the new guard directs his sergeant to form his guard with an interval, and commands: 1. **Prisoners,** 2. **Right,** 3. **FACE,** 4. **Forward,** 5. **MARCH.** The prisoners having arrived opposite the interval in the new guard, he commands: 1. **Prisoners,** 2. **HALT,** 3. **Left,** 4. **FACE,** 5. **Right** (or left), 6. **DRESS,** 7. **FRONT.**

The prisoners dress on the line of the new guard.

### Section 5. Sergeant of the Guard.

**80.** The senior noncommissioned officer of the guard always acts as sergeant of the guard, and if there be no officer of the guard, will perform the duties prescribed for the commander of the guard.

**81.** The sergeant of the guard has general supervision over the other noncommissioned officers and the musicians and privates of the guard, and must be thoroughly familiar with all of their orders and duties.

82. He is directly responsible for the property under charge of the guard, and will see that it is properly cared for. He will make lists of articles taken out by working parties and see that all such articles are duly returned. If they are not, he will immediately report the fact to the commander of the guard.

83. Immediately after guard mounting he will prepare duplicate lists of the names of all noncommissioned officers, musicians, and privates of the guard, showing the relief and post or duties of each. One list will be handed as soon as possible to the commander of the guard; the other will be retained by the sergeant.

84. He will see that all reliefs are turned out at the proper time, and that the corporals thoroughly understand, and are prompt and efficient in, the discharge of their duties.

85. During the temporary absence from the guardhouse of the sergeant of the guard, the next in rank of the noncommissioned officers will perform his duties.

86. Should the corporal whose relief is on post be called away from the guardhouse, the sergeant of the guard will designate a noncommissioned officer to take the corporal's place until his return.

87. The sergeant of the guard is responsible at all times for the proper police of the guardhouse or guard tent, including the ground about them and the prison cells.

88. At first sergeant's call he will proceed to the adjutant's office and obtain the guard report book.

89. When the national or regimental colors are taken from the stacks of the color line, the color bearer and guard, or the sergeant of the guard, unarmed, and two armed privates as a guard, will escort the colors to the colonel's quarters, as prescribed for the color guard in the drill regulations of the arm of the service to which the guard belongs.

90. He will report to the commander of the guard any suspicious or unusual occurrence that comes under his notice, will warn him of the approach of any armed body, and will send to him all persons arrested by the guard.

91. When the guard is turned out its formation will be as follows: The senior noncommissioned officer, if commander of the guard, is on the right of the right guide; if not commander

of the guard, he is in the line of file closers, in rear of the right four of the guard; the next in rank is right guide; the next left guide; the others in the line of file closers, usually each in rear of his relief; the field music, with its left three paces to the right of the right guide. The reliefs form in the same order as when the guard was first divided, except that if the guard consists of dismounted cavalry and infantry, the cavalry forms on the left.

**92.** The sergeant forms the guard, calls the roll, and, if not in command of the guard, reports to the commander of the guard as prescribed in drill regulations for a first sergeant forming a troop or company; the guard is not divided into platoons or sections, and, except when the whole guard is formed prior to marching off, fours are not counted.

**93.** The sergeant reports as follows: "**Sir, all present or accounted for,**" or "**Sir, (so-and-so) is absent**"; or if the roll call has been omitted, "**Sir, the guard is formed.**" Only men absent without proper authority are reported absent. He then takes his place, without command.

**94.** At night the roll may be called by reliefs and numbers instead of names; thus, the first relief being on post: **Second relief; No. 1; No. 2, etc.; Third relief, Corporal; No. 1, etc.**

**95.** Calling the roll will be dispensed with in forming the guard when it is turned out as a compliment, on the approach of an armed body, or in any sudden emergency; but in such cases the roll may be called before dismissing the guard. If the guard be turned out for an officer entitled to inspect it, the roll will, unless he directs otherwise, always be called before a report is made.

**96.** The sergeant of the guard has direct charge of the prisoners, except during such time as they may be under the charge of the prisoner guard or overseers, and is responsible to the commander of the guard for their security.

**97.** He will carry the keys of the guardroom and cells, and will not suffer them to leave his personal possession while he is at the guardhouse, except as hereinafter provided. (Par. **99.**) Should he leave the guardhouse for any purpose he will turn the keys over to the noncommissioned officer who takes his place.

(Par. 85.)

98. He will count the knives, forks, etc., given to the prisoners with their food, and see that none of these articles remain in their possession. He will see that no forbidden articles of any kind are conveyed to the prisoners.

99. Prisoners when paraded with the guard are placed in line, in its center. The sergeant, immediately before forming the guard, will turn over the keys to the noncommissioned officer at the guardhouse. Having formed the guard, he will divide it into two nearly equal parts. Indicating the point of division with his hand, he commands: 1. **Right** (or **left**), 2. **FACE**, 3. **Forward**, 4. **MARCH**, 5. **Guard**, 6. **HALT**, 7. **Left** (or **right**), 8. **FACE**.

If the first command be **right face**, the right half of the guard only will execute the movements; if **left face**, the left half only will execute them. The command **halt** is given when sufficient interval is obtained to admit the prisoners. The doors of the guardroom and cells are then opened by the noncommissioned officer having the keys. The prisoners will file out under the supervision of the sergeant, the noncommissioned officer, and sentinel on duty at the guardhouse, and such other sentinels as may be necessary; they will form in line in the interval between the two parts of the guard.

100. To return the prisoners to the guardroom and cells, the sergeant commands: 1. **Prisoners**, 2. **Right** (or **left**), 3. **FACE**, 4. **Column right** (or **left**), 5. **MARCH**.

The prisoners, under the same supervision as before, return to their proper rooms or cells.

101. To close the guard, the sergeant commands: 1. **Left** (or **right**), 2. **FACE**, 3. **Forward**, 4. **MARCH**, 5. **Guard**, 6. **HALT**, 7. **Right** (or **left**), 8. **FACE**.

The left or right half only of the guard, as indicated, executes the movement.

102. If there be but few prisoners, the sergeant may indicate the point of division as above, and form the necessary interval by the commands: 1. **Right** (or **left**) **step**, 2. **MARCH**, 3. **Guard**, 4. **HALT**, and close the intervals by the commands: 1. **Left** (or **right**) **step**, 2. **MARCH**, 3. **Guard**, 4. **HALT**.

103. If sentinels are numerous, reliefs may, at the discretion of the commanding officer, be posted in detachments, and sergeants, as well as corporals, required to relieve and post the

### Section 6. Corporal of the Guard.

**104.** A corporal of the guard receives and obeys orders from none but noncommissioned officers of the guard senior to himself, the officers of the guard, the officer of the day, and the commanding officer.

**105.** It is the duty of the corporal of the guard to post and relieve sentinels and to instruct the members of his relief in their orders and duties.

**106.** Immediately after the division of the guard into reliefs the corporals will assign the members of their respective reliefs to posts by number, and a soldier so assigned to his post will not be changed to another during the same tour of guard duty, unless by direction of the commander of the guard or higher authority. Usually, experienced soldiers are placed over the arms of the guard, and at remote and responsible posts.

**107.** Each corporal will then make a list of the members of his relief, including himself. This list will contain the number of the relief, the name, the company, and the regiment of every member thereof, and the post to which each is assigned. The list will be made in duplicate, one copy to be given to the sergeant of the guard as soon as completed, the other to be retained by the corporal.

**108.** When directed by the commander of the guard, the corporal of the first relief forms his relief, and then commands: **CALL OFF.**

Commencing on the right, the men call off alternately **rear** and **front rank**, "one," "two," "three," "four," and so on; if in single rank, they call off from right to left. The corporal then commands: 1. **Right**, 2. **FACE**, 3. **Forward**, 4. **MARCH.**

The corporal marches on the left, and near the rear file, in order to observe the march. The corporal of the old guard marches on the right of the leading file, and takes command when the last one of the old sentinels is relieved, changing places with the corporal of the new guard.

**109.** When the relief arrives at six paces from a sentinel (see par. **168**), the corporal halts it and commands, according to the number of the post: **No.** (——.)

Both sentinels execute port arms or saber; the new sentinel approaches the old, halting about one pace from him. (See par. 172.)

110. The corporals advance and place themselves, facing each other, a little in advance of the new sentinel, the old corporal on his right, the new corporal on his left, both at a right shoulder, and observe that the old sentinel transmits correctly his instructions.

The following diagram will illustrate the positions taken:

R is the relief; A, the new corporal; B, the old; C, the new sentinel; D. the old.

111. The instructions relative to the post having been communicated, the new corporal commands, **Post;** both sentinels then resume the right shoulder, face toward the new corporal and step back so as to allow the relief to pass in front of them. The new corporal then commands: "1. **Forward,** 2. **March**"; the old sentinel takes his place in rear of the relief as it passes him, his piece in the same position as those of the relief. The new sentinel stands fast at a right shoulder until the relief has passed six paces beyond him, when he walks his post. The corporals take their places as the relief passes them.

112. Mounted sentinels are posted and relieved in accordance with the same principles.

113. On the return of the old relief, the corporal of the new guard falls out when the relief halts; the corporal of the old guard forms his relief on the left of the old guard, salutes, and reports to the commander of his guard: "**Sir, the relief is present**"; or "**Sir, (so and so) is absent,**" and takes his place in the guard.

**114.** To post a relief other than that which is posted when the old guard is relieved, its corporal commands:

1. **(Such) relief**, 2. **FALL IN**; and if arms are stacked, they are taken at the proper commands.

The relief is formed facing to the front, with arms at an order, the men place themselves according to the numbers of their respective posts, viz, **two, four, six**, and so on, in the **front rank**, and **one, three, five**, and so on, in the **rear rank**. The corporal, standing about two paces in front of the center of his relief, then commands: **CALL OFF**.

The men call off as prescribed. The corporal then commands: 1. **Inspection**, 2. **ARMS**, 3. **Order**, 4. **ARMS**; faces the commander of the guard, executes the rifle salute, reports: "**Sir, the relief is present**"; or "**Sir, (so and so) is absent**"; he then takes his place on the right at order arms.

**115.** When the commander of the guard directs the corporal, **Post your relief**, the corporal salutes and posts his relief as prescribed (Pars. **108** to **111**); the corporal of the relief on post does not go with the new relief, except when necessary to show the way.

**116.** To dismiss the old relief, it is halted and faced to the front at the guardhouse by the corporal of the new relief, who then falls out; the corporal of the old relief then steps in front of the relief and dismisses it by the proper commands.

**117.** Should the pieces have been loaded before the relief was posted, the corporal will, before dismissing the relief, see that no cartridges are left in the chambers of magazines. The same rule applies to sentinels over prisoners.

**118.** Each corporal will thoroughly acquaint himself with all the special orders of every sentinel on his relief, and see that each understands and correctly transmits such orders in detail to his successor.

**119.** There should be at least one noncommissioned officer constantly on the alert at the guardhouse, usually the corporal whose relief is on post. This noncommissioned officer takes ost near the entrance of the guardhouse, and does not fall in h the guard when it is formed. He will have his rifle con- ntly with him.

**120.** Whenever it becomes necessary for the corporal to leave his post near the entrance of the guardhouse, he will notify the sergeant of the guard, who will at once take his place, or designate another noncommissioned officer to do so.

**121.** He will see that no person enters the guardhouse or guard tent, or crosses the posts of the sentinels there posted without proper authority.

**122.** Should any sentinel call for the corporal of the guard, the corporal will, in every case, at once and quickly proceed to such sentinel. He will notify the sergeant of the guard before leaving the guardhouse.

**123.** He will at once report to the commander of the guard any violation of regulations or any unusual occurrence which is reported to him by a sentinel, or which comes to his notice in any other way.

**124.** Should a sentinel call "**The Guard,**" the corporal will promptly notify the commander of the guard.

**125.** Should a sentinel call "**Relief,**" the corporal will at once proceed to the post of such sentinel, taking with him the man next for duty on that post. If the sentinel is relieved for a short time only, the corporal will again post him as soon as the necessity for his relief ceases.

**126.** When the countersign is used, the corporal at the posting of the relief during whose tour challenging is to begin gives the countersign to the members of the relief, excepting those posted at the guardhouse.

**127.** He will wake the corporal whose relief is next on post in time for the latter to verify the prisoners, form his relief, and post it at the proper hour.

**128.** Should the guard be turned out, each corporal will call his own relief, and cause its members to fall in promptly.

**129.** Tents or bunks in the same vicinity will be designated for the reliefs so that all the members of each relief may, if necessary, be found and turned out by the corporal in the least time and with the least confusion.

**130.** When challenged by a sentinel while posting his relief, the corporal commands: 1. **Relief,** 2. **HALT;** to the sentinel's challenge he answers "**Relief,**" and at the order of the sentinel

he advances alone to give the countersign, or to be recognized. When the sentinel says, "**Advance relief,**" the corporal commands: 1. **Forward,** 2. **MARCH.**

If to be relieved, the sentinel is then relieved as prescribed.

**131.** Between retreat and reveille, the corporal of the guard will challenge all suspicious-looking persons or parties he may observe, first halting his patrol or relief, if either be with him. He will advance them in the same manner that sentinels on post advance like parties (pars. **191** to **197**), but if the route of a patrol is on a continuous chain of sentinels, he should not challenge persons coming near him unless he has reason to believe that they have eluded the vigilance of sentinels.

**132.** Between retreat and reveille, whenever so ordered by an officer entitled to inspect the guard, the corporal will call: "**Turn out the guard,**" announcing the title of the officer, and then, if not otherwise ordered, he will salute and return to his post.

**133.** As a general rule he will advance parties approaching the guard at night in the same manner that sentinels on post advance like parties. Thus, the sentinel at the guardhouse challenges and repeats the answer to the corporal, as prescribed hereafter (par. **200**); the corporal, advancing at port arms, says: "**Advance (so and so) with the countersign,**" or "**to be recognized,**" if there be no countersign used; the countersign being correctly given, or the party being duly recognized, the corporal says: "**Advance (so and so),**" repeating the answer to the challenge of the sentinel.

**134.** When officers of different rank approach the guardhouse from different directions at the same time, the senior will be advanced first, and will not be made to wait for his junior.

**135.** Out of ranks and under arms, the corporal salutes with the rifle salute. He will salute all officers, whether by day or night.

**136.** The corporal will examine parties halted and detained by sentinels, and, if he have reason to believe the parties have no authority to cross sentinel's posts, will conduct them to the commander of the guard.

**137.** The corporal of the guard will arrest all suspicious looking characters prowling about the post or camp, all persons of

a disorderly character disturbing the peace, and all persons taken in the act of committing crime against the Government on a military reservation or post. All persons arrested by corporals of the guard or by sentinels will at once be conducted to the commander of the guard by the corporal.

### Section 7. Musicians of the Guard.

**138.** The musicians of the guard will sound calls as prescribed by the commanding officer.

**139.** Should the guard be turned out for national or regimental colors or standards, uncased, the field music of the guard will, when the guard present arms, sound, "**To the color**" or "**To the standard**"; or, if for any person entitled thereto, the march, flourishes, or ruffles, prescribed in paragraphs 375, 376, and 377, A. R.

### Section 8. Orderlies and Color Sentinels.

**140.** When so directed by the commanding officer, the officer who inspects the guard at guard mounting will select from the members of the new guard an orderly for the commanding officer and such number of other orderlies and color sentinels as may be required.

**141.** For these positions the soldiers will be chosen who are most correct in the performance of duty and in military bearing, neatest in person and clothing, and whose arms and accouterments are in the best condition. Clothing, arms, and equipments must conform to regulations. If there is any doubt as to the relative qualifications of two or more soldiers, the inspecting officer will cause them to fall out at the guardhouse and to form in line in single rank. He will then, by testing them in drill regulations, select the most proficient. The commander of the guard will be notified of the selection.

**142.** When directed by the commander of the guard to fall out and report an orderly will give his name, company, and regiment to the sergeant of the guard, and, leaving his rifle in the arm rack in his company quarters, will proceed at once to the officer to whom he is assigned, reporting: "**Sir, Private ——, Company ——**".

143. If the orderly selected be a cavalryman, he will leave his rifle in the arm rack of his troop quarters, and report with his belt on, but without side arms unless specially otherwise ordered.

144. Orderlies, while on duty as such, are subject only to the orders of the commanding officer and of the officers to whom they are ordered to report.

145. When an orderly is ordered to carry a message, he will be careful to deliver it exactly as it was given to him.

146. His tour of duty ends when he is relieved by the orderly selected from the guard relieving his own.

147. Orderlies are members of the guard, and their name, company, and regiment are entered on the guard report and lists of the guard.

148. If a color line is established, sufficient sentinels are placed on the color line to guard the colors and stacks.

149. Color sentinels are posted only so long as the stacks are formed. The commander of the guard will divide the time equally among them.

150. When stacks are broken, the color sentinels may be permitted to return to their respective companies. They are required to report in person to the commander of the guard at reveille and retreat. They will fall in with the guard, under arms, at guard mounting.

151. Color sentinels are not placed on the regular reliefs, nor are their posts numbered. In calling for the corporal of the guard, they call: "Corporal of the guard. Color line."

152. Officers or enlisted men passing the uncased colors will render the prescribed salute. If the colors are on the stacks, the salute will be made on crossing the color line or on passing the colors.

153. A sentinel placed over the colors will not permit them to be moved except in the presence of an armed escort. Unless otherwise ordered by the commanding officer, he will allow no one to touch them but the color bearer.

He will not permit any soldier to take arms from the stacks or to touch them except by order of an officer or noncommissioned officer of the guard.

If any person passing the colors or crossing the color line fails to salute the colors, the sentinel will caution him to do so, and if the caution be not heeded he will call the corporal of the guard and report the facts.

### Section 9. Privates of the Guard.

**154.** Privates are assigned to reliefs by the commander of the guard, and to posts usually by the corporal of their relief. They will not change from one relief or post to another during the same tour of guard duty unless by proper authority.

### Section 10. Orders for Sentinels.

**155.** Orders for sentinels are of two classes: General orders and special orders. General orders apply to all sentinels. Special orders relate to particular posts and duties.

**156.** Sentinels will be required to memorize the following:

My general orders are:

1. **To take charge of this post and all Government property in view.**
2. **To walk my post in a military manner keeping always on the alert and observing everything that takes place within sight or hearing.**
3. **To report all violations of orders I am instructed to enforce.**
4. **To repeat all calls from posts more distant from the guard house than my own.**
5. **To quit my post only when properly relieved.**
6. **To receive, obey, and pass on to the sentinel who relieves me all orders from the commanding officer, officer of the day, and officers and noncommissioned officers of the guard only.**
7. **To talk to no one except in line of duty.**
8. **In case of fire or disorder to give the alarm.**
9. **To allow no one to commit a nuisance on or near my post.**
10. **In any case not covered by instructions to call the corporal of the guard.**
11. **To salute all officers, and all colors and standards not cased.**

**12. To be especially watchful at night, and during the time for challenging, to challenge all persons on or near my post and to allow no one to pass without proper authority.**

## REGULATIONS RELATING TO THE GENERAL ORDERS FOR SENTINELS.

### NO. 1. TO TAKE CHARGE OF THIS POST AND ALL GOVERNMENT PROPERTY IN VIEW.

**157.** All persons, of whatever rank in the service, are required to observe respect toward sentinels and members of the guard when such are in the performance of their duties.

**158.** A sentinel will at once report to the corporal of the guard every unusual or suspicious occurrence noted.

**159.** He will arrest suspicious persons prowling about the post or camp at any time, all parties to a disorder occurring on or near his post, and all, except authorized persons, who attempt to enter the camp at night, and will turn over to the corporal of the guard all persons arrested.

**160.** The number, limits, and extent of his post will invariably constitute part of the special orders of a sentinel on post. The limits of his post should be so defined as to include every place to which he is required to go in the performance of his duties.

### NO. 2. TO WALK MY POST IN A MILITARY MANNER, KEEPING ALWAYS ON THE ALERT AND OBSERVING EVERYTHING THAT TAKES PLACE WITHIN SIGHT OR HEARING.

**161.** A sentinel is not required to halt and change the position of his rifle on arriving at the end of his post, nor to execute to the rear, march, precisely as prescribed in the drill regulations, but faces about while walking in the manner most convenient to him and at any part of his post as may be best suited to the proper performance of his duties. He carries his rifle on either shoulder, and in wet or severe weather, when not in a sentry box, may carry it at a secure.

**162.** Sentinels when in sentry boxes stand at ease. Sentry boxes will be used in wet weather only, or at other times when specially authorized by the commanding officer.

**163.** In very hot weather, sentinels may be authorized to stand at ease on their posts, provided they can effectively discharge their duties in this position; but they will take advantage of this privilege only on the express authority of the officer of the day or the commander of the guard.

**164.** A mounted sentinel may dismount occasionally and lead his horse, but will not relax his vigilance.

NO. 3. TO REPORT ALL VIOLATIONS OF ORDERS I AM INSTRUCTED TO ENFORCE.

**165.** A sentinel will ordinarily report a violation of orders when he is inspected or relieved, but if the case be urgent, he will call the corporal of the guard, and also, if necessary, will arrest the offender.

NO. 4. TO REPEAT ALL CALLS FROM POSTS MORE DISTANT FROM THE GUARDHOUSE THAN MY OWN.

**166.** To call the corporal of the guard for any purpose other than relief, fire, or disorder (pars. **167** and **173**), a sentinel will call, "**Corporal of the guard, No. (——),**" adding the number of his post. In no case will any sentinel call, "**Never mind the corporal**"; nor will the corporal heed such call if given.

NO. 5. TO QUIT MY POST ONLY WHEN PROPERLY RELIEVED.

**167.** If relief becomes necessary, by reason of sickness or other cause, a sentinel will call, "**Corporal of the guard, No. (——), Relief,**" giving the number of his post.

**168.** Whenever a sentinel is to be relieved, he will halt, and with arms at a right shoulder, will face toward the relief, when it is 30 paces from him. He will come to a port arms with the new sentinel, and in a low tone will transmit to him all the special orders relating to the post and any other information which will [redacted] duties.

NO. 6. TO RECEIVE, OBEY, AND PASS ON TO THE SENTINEL WHO RELIEVES ME, ALL ORDERS FROM THE COMMANDING OFFICER, OFFICER OF THE DAY, AND OFFICERS AND NONCOMMISSIONED OFFICERS OF THE GUARD ONLY.

**169.** During his tour of duty a soldier is subject to the orders of the commanding officer, officer of the day, and officers and noncommissioned officers of the guard only; but any officer is competent to investigate apparent violations of regulations by members of the guard.

**170.** A sentinel will quit his piece on an explicit order from any person from whom he lawfully receives orders while on post; under no circumstances will he yield it to any other person. Unless necessity therefor exists, no person will require a sentinel to quit his piece, even to allow it to be inspected.

**171.** A sentinel will not divulge the countersign (pars. **209** to **217**) to anyone except the sentinel who relieves him, or to a person from whom he properly receives orders, on such person's verbal order given personally. Privates of the guard will not use the countersign except in the performance of their duties while posted as sentinels.

NO. 7. TO TALK TO NO ONE EXCEPT IN LINE OF DUTY.

**172.** When calling for any purpose, challenging, or holding communication with any person a dismounted sentinel armed with a rifle or saber will take the position of port arms or saber. At night a dismounted sentinel armed with a pistol takes the position of raised pistol in challenging or holding communication. A mounted sentinel does not ordinarily draw his weapon in the daytime when challenging or holding conversation; but if drawn, he holds it at advance rifle, raise pistol, or port saber, according as he is armed with a rifle, pistol, or saber. At night in challenging and holding conversation his weapon is drawn and held as just prescribed, depending on whether he is armed with a rifle, pistol, or saber.

NO. 8. IN CASE OF FIRE OR DISORDER TO GIVE THE ALARM.

**173.** In case of fire, a sentinel will call, "**Fire, No. (——),**" adding the number of his post; if possible, he will extinguish

the fire himself. In case of disorder he will call, "The Guard, No. (——)," adding the number of his post. If the danger be great, he will in either case discharge his piece before calling.

NO. 11. TO SALUTE ALL OFFICERS AND ALL COLORS AND STANDARDS NOT CASED.

174. When not engaged in the performance of a specific duty, the proper execution of which would prevent it, a member of the guard will salute all officers who pass him. This rule applies at all hours of the day or night, except in the case of mounted sentinels armed with a rifle or pistol, or dismounted sentinels armed with a pistol, after challenging. (See par. 181.)

175. Sentinels will salute as follows: A dismounted sentinel armed with a rifle or saber, salutes by presenting arms; if otherwise armed, he salutes with the right hand.

A mounted sentinel, if armed with a saber and the saber be drawn, salutes by presenting saber; otherwise he salutes in all cases with the right hand.

176. To salute, a dismounted sentinel, with piece at a right shoulder or saber at a carry, halts and faces toward the person to be saluted when the latter arrives within 30 paces.

The limit within which individuals and insignia of rank can be readily recognized is assumed to be about 30 paces, and therefore at this distance cognizance is taken of the person or party to be saluted.

177. The salute is rendered at six paces; if the person to be saluted does not arrives within that distance, then when he is nearest.

178. A sentinel in a sentry box, armed with a rifle, stands at attention in the doorway on the approach of a person or party entitled to salute, and salutes by presenting arms according to the foregoing rules.

If armed with a saber, he stands at a carry and salutes as before.

179. A mounted sentinel on a regular post, halts, faces, and salutes in accordance with the foregoing rules. If doing patrol duty, he salutes, but does not halt unless spoken to.

180. Sentinels salute, in accordance with the foregoing rules, all persons and parties entitled [illegible] from the guards

(pars. 224, 227, and 228); officers of the Army, Navy, and Marine Corps; military and naval officers of foreign powers; officers of volunteers and militia officers when in uniform.

181. A sentinel salutes as just prescribed when an officer comes on his post; if the officer holds communication with the sentinel, the sentinel again salutes when the officer leaves him.

During the hours when challenging is prescribed, the first salute is given as soon as the officer has been duly recognized and advanced. A mounted sentinel armed with a rifle or pistol, or a dismounted sentinel armed with a pistol, does not salute after challenging.

He stands at advance rifle or raise pistol until the officer passes.

182. In case of the approach of an armed party of the guard, the sentinel will halt when it is about 30 paces from him, facing toward the party with his piece at the right shoulder. If not himself relieved, he will, as the party passes, place himself so that the party will pass in front of him; he resumes walking his post when the party has reached six paces beyond him.

183. An officer is entitled to the compliments prescribed, whether in uniform or not.

184. A sentinel in communication with an officer will not interrupt the conversation to salute. In the case of seniors the officer will salute, whereupon the sentinel will salute.

185. When the flag is being lowered at retreat, a sentinel on post and in view of the flag will face the flag, and, at the first note of the Star-Spangled Banner or to the color will come to a present arms. At the sounding of the last note he will resume walking his post.

NO. 12. TO BE ESPECIALLY WATCHFUL AT NIGHT AND DURING THE TIME FOR CHALLENGING, TO CHALLENGE ALL PERSONS ON OR NEAR MY POST, AND TO ALLOW NO ONE TO PASS WITHOUT PROPER AUTHORITY.

186. During challenging hours, if a sentinel sees any person or party on or near his post, he will advance rapidly along his post toward such person or party and when within about 30

yards will challenge sharply, "**Halt, Who is there?**" He will place himself in the best possible position to receive or, if necessary, to arrest the person or party.

**187.** In case a mounted party be challenged, the sentinel will call, "**Halt, Dismount. Who is there?**"

**188.** The sentinel will permit only one of any party to approach him for the purpose of giving the countersign (pars. **209** to **217**), or, if no countersign be used, of being duly recognized. When this is done the whole party is advanced, i. e., allowed to pass.

**189.** In all cases the sentinel must satisfy himself beyond a reasonable doubt that the parties are what they represent themselves to be and have a right to pass. If he is not satisfied he must cause them to stand and call the corporal of the guard. So, likewise, if he have no authority to pass persons with the countersign, or when the party has not the countersign or gives an incorrect one.

## ORDERS FOR SENTINELS.

**190.** A sentinel will not permit any person to approach so close as to prevent the proper use of his own weapon before recognizing the person or receiving the countersign.

**191.** When two or more persons approach in one party, the sentinel, on receiving an answer that indicates that some one in the party has the countersign, will say, "**Advance one with the countersign,**" and, if the countersign is given correctly, will then say, "**Advance (so-and-so),**" repeating the answer to his challenge. Thus if the answer be "**Relief (friend with the countersign, patrol, etc.),**" the sentinel will say, "**Advance one with the countersign**"; then "**Advance, relief (friends, patrol, etc.).**"

**192.** If a person having the countersign approach alone, he is advanced to give the countersign. Thus if the answer be "**Friend with the countersign (or officer of the day, or etc.),**" the sentinel will say, "**Advance, friend (or officer of the day, or etc.) with the countersign**"; then "**Advance, friend (or officer of the day, or etc.).**"

**193.** If two or more [redacted] post from different directions at [redacted] chal-

lenged in turn and required to halt and to remain halted until advanced.

The senior is first advanced, in accordance with the foregoing rules.

**194.** If a party is already advanced and in communication with a sentinel, the latter will challenge any other party that may approach; if the party challenged be senior to the one already on his post, the sentinel will advance the new party at once. The senior may allow him to advance any or all of the other parties; otherwise the sentinel will not advance any of them until the senior leaves him. He will then advance the senior only of the remaining parties, and so on.

**195.** The following order of rank will govern a sentinel in advancing different persons or parties approaching his post: Commanding officers, officer of the day, officer of the guard, officers, patrols, reliefs, noncommissioned officers of the guard in order of rank, friends.

**196.** A sentinel will never allow himself to be surprised, nor permit two parties to advance upon him at the same time.

**197.** If no countersign be used, the rules for challenging are the same. The rules for advancing parties are modified only as follows: Instead of saying "**Advance (so-and-so) with the countersign,**" the sentinel will say, "**Advance (so-and-so) to be recognized.**" Upon recognition he will say, "**Advance (so-and-so).**"

**198.** Answers to a sentinel's challenge intended to confuse or mislead him are prohibited, but the use of such an answer as "**Friends with the countersign,**" is not to be understood as misleading, but as the usual answer made by officers, patrols, etc., when the purpose of their visit makes it desirable that their official capacity should not be announced.

### SPECIAL ORDERS FOR SENTINELS AT THE POST OF THE GUARD.

**199.** Sentinels posted at the guard will be required to memorize the following:

**Between reveille and retreat to turn out the guard for all persons designated by the commanding officer, for all colors or standards not cased, and in time of war for all armed parties**

approaching my post, except troops at drill and reliefs and detachments of the guard.

At night, after challenging any person or party, to advance no one but call the corporal of the guard, repeating the answer to the challenge.

**200.** After receiving an answer to his challenge, the sentinel calls, "**Corporal of the guard (so and so),**" repeating the answer to the challenge.

He does not in such cases repeat the number of his post.

**201.** He remains in the position assumed in challenging until the corporal has recognized or advanced the person or party challenged, when he resumes walking his post, or, if the person or party be entitled thereto, he salutes and, as soon as the salute has been acknowledged, resumes walking his post.

**202.** The sentinel at the post of the guard will be notified by direction of the commanding officer of the presence in camp or garrison of persons entitled to the compliment. (Par. **224.**)

**203.** The following examples illustrate the manner in which the sentinel at the post of the guard will turn out the guard upon the approach of persons or parties entitled to the compliment (pars. **224, 227,** and **228**), "**Turn out the guard, commanding officer**"; "**Turn out the guard, governor of a Territory**"; "**Turn out the guard, national colors**"; "**Turn out the guard, armed party**"; etc.

At the approach of the new guard at guard mounting the sentinel will call, "**Turn out the guard, armed party.**"

**204.** Should the person named by the sentinel not desire the guard formed, he will salute, whereupon the sentinel will call "**Never mind the guard.**"

**205.** After having called "**Turn out the guard,**" the sentinel will never call "**Never mind the guard,**" on the approach of an armed party.

**206.** Though the guard be already formed he will not fail to call, "**Turn out the guard,**" as required in his special orders, except that the guard will not be turned out for any person while his senior is at or coming to the post of the guard.

**207.** The sentinels at the post of the guard will warn the commander of the approach of any armed body and of the presence in the vicinity of all suspicious or disorderly persons.

208. In case of fire or disorder in sight or hearing, the sentinel at the guardhouse will call the corporal of the guard and report the facts to him.

### Section 11. Countersigns and Paroles.

209. *Seventy-seventh article of war.*—Any person subject to military law who makes known the parole or countersign to any person not entitled to receive it according to the rules and discipline of war, or gives a parole or countersign different from that which he received, shall, if the offense be committeed in time of war, suffer death or such other punishment as a court-martial may direct. (See par. 171.)

210. The **countersign** is a word given daily from the principal headquarters of a command to aid guards and sentinels in identifying persons who may be authorized to pass at night.

It is given to such persons as may be authorized to pass and repass sentinels' posts during the night, and to officers, noncommissioned officers, and sentinels of the guard.

211. The **parole** is a word used as a check on the countersign in order to obtain more accurate identification of persons. It is imparted only to those who are entitled to inspect guards and to commanders of guards.

The parole or countersign, or both, are sent sealed in the form of an order to those entitled to them.

212. When the commander of the guard demands the parole, he will advance and receive it as the corporal receives the countersign. (See par. 133.)

213. As the communications containing the parole and countersign must at times be distributed by many orderlies, the parole intrusted to many officers, and the countersign and parole to many officers and sentinels, and as both the countersign and parole must, for large commands, be prepared several days in advance, there is always danger of their being lost or becoming known to persons who would make improper use of them; moreover, a sentinel is too apt to take it for granted that any person who gives the right countersign is what he represents himself to be; hence for outpost duty there is greater security in omitting the use of the countersign and parole, or in using them

great caution. The chief reliance should be upon personal recognition or identification of all persons claiming authority to pass.

Persons whose sole means of identification is the countersign, or concerning whose authority to pass there is a reasonable doubt, should not be allowed to pass without the authority of the corporal of the guard after proper investigation; the corporal will take to his next superior any person about whom he is not competent to decide.

214. The **countersign** is usually the name of a battle; the **parole**, that of a general or other distinguished person.

215. When they can not be communicated daily, a series of words for some days in advance may be sent to posts or detachments that are to use the same parole or countersign as the main body.

216. If the countersign be lost, or if a member of the guard deserts with it, the commander on the spot will substitute another for it and report the case at once to headquarters.

217. In addition to the countersign, use may be made of preconcerted signals, such as striking the rifle with the hand or striking the hands together a certain number of times as agreed upon. Such signals may be used only by guards that occupy exposed points.

They are used before the countersign is given and must not be communicated to anyone not entitled to know the countersign. Their use is intended to prevent the surprise of a sentinel.

In the daytime signals such as raising a cap or a handkerchief in a prearranged manner may be used by sentinels to communicate with the guard or with each other.

### Section 12. Guard Patrols.

218. A guard patrol consists of one or more men detailed for the performance of some special service connected with guard duty.

219. If the patrol be required to go beyond the chain of sentinels, the officer or noncommissioned officer in charge will be furnished [illegible] countersign and the outposts and sentinels warned [illegible]

220. If challenged by a sentinel, the patrol is halted by its commander, and the noncommissioned officer accompanying it advances alone and gives the countersign.

### Section 13. Watchmen.

221. Enlisted men may be detailed as watchmen or as overseers over prisoners, and as such will receive their orders and perform their duties as the commanding officer may direct.

### Section 14. Compliments from Guards.

222. The compliment from a guard consists in the guard turning out and presenting arms. (See par. 50.) No. compliments will be paid between retreat and reveille except as provided in paragraphs 361 and 362, nor will any person other than those named in paragraph 224 receive the compliment.

223. Though a guard does not turn out between retreat and reveille as a matter of compliment it may be turned out for inspection at any time by a person entitled to inspect it.

224. Between reveille and retreat, the following persons are entitled to the compliment: The President; sovereign or chief magistrate of a foreign country and members of a royal family; Vice President; President and President pro tempore of the Senate; American and foreign ambassadors; members of the Cabinet; Chief Justice; Speaker of the House of Representatives; committees of Congress officially visiting a military post; governors within their respective States and Territories; governors general; Assistant Secretary of War officially visiting a military post; all general officers of the Army; general officers of foreign services visiting a post; naval, marine, volunteer, and militia officers in the service of the United States and holding the rank of general officer; American or foreign envoys or ministers; ministers accredited to the United States; chargés d'affaires accredited to the United States; consuls general accredited to the United States; commanding officer of the post or camp; officer of the day.

225. The relative rank between officers of the Army and Navy is as follows: General with admiral, lieutenant general with

vice admiral, major general with rear admiral, brigadier general with commodore,[1] colonel with captain, lieutenant colonel with commander, major with lieutenant commander, captain with lieutenant, first lieutenant with lieutenant (junior grade), second lieutenant with ensign. (A. R. 12.)

**226.** Sentinels will not be required to memorize paragraph **224**, and, except in the cases of general officers of the Army, the commanding officer and the officer of the day will be advised in each case of the presence in camp or garrison of persons entitled to the compliment.

**227.** Guards will turn out and present arms when the national or regimental colors or standards, not cased, are carried past by a guard or an armed party. This rule also applies when the party carrying the colors is at drill. If the drill is conducted in the vicinity of the guardhouse, the guard will be turned out when the colors first pass, and not thereafter.

**228.** In case the remains of a deceased officer or soldier are carried past, the guard will turn out and present arms.

**229.** In time of war all guards will turn out under arms when armed parties, except troops at drill and reliefs or detachments of the guard, approach their post. (See par. **53**.)

**230.** The commander of the guard will be notified of the presence in camp or garrison of all persons entitled to the compliment except general officers of the Army, the commanding officer, and the officer of the day. Members of the guard will salute all persons entitled to the compliment and all officers in the military or naval service of foreign powers, officers of the Army, Navy, and Marine Corps, officers of volunteers, and officers of militia when in uniform.

GENERAL RULES CONCERNING GUARD DUTY.

**232.** *Eighty-fifth article of war.*— * * * Any person subject to military law, except an officer, who is found drunk on duty shall be punished as a court-martial may direct.

[1] The grade of commodore ceased to exist as a grade on the active list of the Navy of the United States on Mar. 3, 1899. By section 7 of the act of Mar. 3, 1899 [illegible] to receive the pay and [illegible]

**233.** All material instructions given to a member of the guard by an officer having authority will be promptly communicated to the commander of the guard by the officer giving them.

**234.** Should the guard be formed, soldiers will fall in ranks under arms. At roll call each man, as his name or number and relief are called, will answer "Here," and come to an order arms.

**235.** Whenever the guard or a relief is dismissed, each member not at once required for duty will place his rifle in the arm racks, if they be provided, and will not remove it therefrom unless he requires it in the performance of some duty.

**236.** Without permission from the commander of the guard, members of the main guard, except orderlies, will not leave the immediate vicinity of the guardhouse. Permission to leave will not be granted except in cases of necessity.

**237.** Members of the main guard, except orderlies, will not remove their accouterments or clothing without permission from the commander of the guard. (Par. 66.)

### Section 15. Prisoners.

**238.** Articles of war 69, 70, 71, 72, and 73 have special reference to the confinement of prisoners and should be carefully borne in mind.

**239.** The commander of the guard will place a civilian in confinement on an order from higher authority only, unless such civilian is arrested while in the act of committing some crime within the limits of the military jurisdiction, in which case the commanding officer will be immediately notified.

**240.** Except as provided in the sixty-eighth article of war, or when restraint is necessary, no soldier will be confined without the order of an officer, who shall previously inquire into his offense. (A. R. 930.)

**241.** An officer ordering a soldier into confinement will send, as soon as practicable, a written statement, signed by himself, to the commander of the guard, setting forth the name, company, and regiment of such soldier, and a brief statement of the alleged offense. It is a sufficient statement of the offense to give the number and article of war under which the soldier is charged.

242. A prisoner, after his first day of confinement, and until his sentence has been duly promulgated, is considered as held in confinement by the commanding officer. After due promulgation of his sentence, the prisoner is held in confinement by authority of the officer who reviews the proceedings of the court awarding sentence. The commander of the guard will state in his report, in the proper place, the name of the officer by whom the prisoner was originally confined.

243. Enlisted men against whom charges have been preferred will be designated as "awaiting trial"; enlisted men who have been tried will, prior to the promulgation of the result, be designated as "awaiting result of trial"; enlisted men serving sentences of confinement not involving dishonorable discharge, will be designated as "garrison prisoners." Persons sentenced to dismissal or dishonorable discharge and to terms of confinement at military posts or elsewhere will be designated as "general prisoners." (A. R. 928.)

244. The sentences of prisoners will be read to them when the order promulgating the same is received. The officer of the guard, or the officer of the day if there be no officer of the guard, will read them unless the commanding officer shall direct otherwise.

245. When the date for the commencement of a term of confinement imposed by sentence of a court-martial is not expressly fixed by sentence, the term of confinement begins on the date of the order promulgating it. The sentence is continuous until the term expires, except when the persons sentenced is absent without authority. (A. R. 969.)

246. When soldiers awaiting trial or the result of trial, or undergoing sentence commit offenses for which they are tried, the second sentence will be executed upon the expiration of the first.

247. Prisoners awaiting trial by, or undergoing sentence of, a general court-martial and those confined for serious offenses will be kept apart, when practicable, from those confined by sentence of an inferior court or for minor offenses. Enlisted men in confinement for minor offenses, or awaiting trial or the result of trial for the same, will ordinarily be sent to work under charge of unarmed overseers instead of armed sentinels.

will be required to attend drills unless the commanding officer shall direct otherwise.

**248.** Prisoners, other than general prisoners, will be furnished with food from their respective companies or from the organizations to which they may be temporarily attached.

The food of prisoners will, when practicable, be sent to their places of confinement, but post commanders may arrange to send the prisoners, under proper guard, to their messes for meals.

When there is no special mess for general prisoners, they will be attached for rations to companies.

Enlisted men bringing meals for the prisoners will not be allowed to enter the prison room. (See par. **289.**)

**249.** With the exception of those specially designated by the commanding officer, no prisoners will be allowed to leave the guardhouse unless under charge of a sentinel and passed by an officer or noncommissioned officer of the guard. The commanding officer may authorize certain garrison prisoners and paroled general prisoners to leave the guardhouse, not under the charge of a sentinel, for the purpose of working outside under such surveillance and restrictions as he may impose.

**250.** Prisoners reporting themselves sick at sick call, or at the time designated by the commanding officer, will be sent to the hospital under charge of proper guard, with a sick report kept for the purpose. The recommendation of the surgeon will be entered in the guard report.

**251.** The security of sick prisoners in the hospital devolves upon the post surgeon, who will, if necessary, apply to the post commander for a guard.

**252.** Prisoners will be paraded with the guard only when directed by the commanding officer or the officer of the day.

**253.** A prisoner under charge of a sentinel will not salute an officer.

**254.** All serviceable clothing which belongs to a prisoner, and his blankets, will accompany him to the post designated for his confinement, and will be fully itemized on the clothing list sent to that post. The guard in charge of the prisoner during transfer will be furnished with a duplicate of this list, and will be held responsible for the delivery of all articles itemized therein with the prisoner. At least one serviceable woolen

blanket will be sent with every such prisoner so transferred. (A. R. 939.)

**255.** When mattresses are not supplied, each prisoner in the guardhouse will be allowed a bed sack and 30 pounds of straw per month for bedding. So far as practicable iron bunks will be furnished to all prisoners in post guardhouses and prison rooms. (A. R. 1084.)

**256.** If the number of prisoners, including general prisoners, confined at a post justifies it, the commanding officer will detail a commissioned officer as "officer in charge of prisoners." At posts where the average number of prisoners continually in confinement is less than 12, the detail of an officer in charge of prisoners will not be made.

### Section 16. Guarding Prisoners.

**299.** The sentinel at the post of the guard has charge of the prisoners except when they have been turned over to the prisoner guard or overseers. (Pars. 247 and 300 to 304.)

**(a) He will allow none to escape.**

**(b) He will allow none to cross his post leaving the guardhouse except when passed by an officer or noncommissioned officer of the guard.**

**(c) He will allow no one to communicate with prisoners without permission from proper authority.**

**(d) He will promptly report to the corporal of the guard any suspicious noise made by the prisoners.**

**(e) He will be prepared to tell, whenever asked, how many prisoners are in the guardhouse and how many are out at work or elsewhere.**

Whenever prisoners are brought to his post returning from work or elsewhere, he will halt them and call the corporal of the guard, notifying him of the number of prisoners returning. Thus: "**Corporal of the guard, (so many) prisoners.**"

He will not allow prisoners to pass into the guardhouse until the corporal of the guard has responded to the call and ordered him to do so.

**300.** Whenever practicable, special guards will be detailed for the particular duty of guarding working parties composed

**340.** The national flag will always be displayed at the time of firing a salute. (A. R. 397.)

**341.** The flag of a military post will not be dipped by way of salute or compliment. (A. R. 405.)

**342.** On the death of an officer at a military post the flag is displayed at halfstaff and so remains between reveille and retreat until the last salvo or volley is fired over the grave; or if the remains are not interred at the post until they are removed therefrom. (A. R. 422.)

**343.** During the funeral of an enlisted man at a military post the flag is displayed at halfstaff. It is hoisted to the top after the final volley or gun is fired or after the remains are taken from the post. The same honors are paid on the occasion of the funeral of a retired enlisted man. (A. R. 423.)

**344.** When practicable, a detail consisting of a noncommissioned officer and two privates of the guard will raise or lower the flag. This detail wears side arms or if the special equipments do not include side arms then belts only.

The noncommissioned officer, carrying the flag, forms the detail in line, takes his post in the center and marches it to the staff. The flag is then securely attached to the halyards and rapidly hoisted. The halyards are then securely fastened to the cleat on the staff and the detail marched to the guardhouse.

**345.** When the flag is to be lowered, the halyards are loosened from the staff and made perfectly free. At retreat the flag is lowered at the last note of retreat. It is then neatly folded and the halyards made fast. The detail is then re-formed and marched to the guardhouse, where the flag is turned over to the commander of the guard.

The flag should never be allowed to touch the ground and should always be hoisted or lowered from the leeward side of the staff, the halyards being held by two persons.

### Section 18. Reveille and Retreat Gun.

**346.** The morning and evening gun will be fired by a detachment of the guard, consisting, when practicable, of a corporal and two privates. The morning gun is fired at the first note of

reveille, or, if marches be played before the reveille, it is fired at the beginning of the first march. The retreat gun is fired at the last note of retreat.

The corporal marches the detachment to and from the piece, which is fired, sponged out, and secured under his direction.

### Section 19. Guard Mounting.

**347.** Guard mounting will be formal or informal as the commanding officer may direct. It will be held as prescribed in the drill regulations of the arm of the service to which the guard belongs. If none is prescribed, then as for infantry. In case the guard is composed wholly of mounted organizations, guard mounting may be held mounted.

**348.** When infantry and mounted troops dismounted are united for guard mounting, all details form as prescribed for infantry.

### Section 20. Formal Guard Mounting for Infantry.

**349.** Formal guard mounting will ordinarily be held only in posts or camps where a band is present.

**350.** At the **assembly**, the men designated for the guard fall in on their company parade grounds as prescribed in paragraph 106, I. D. R. The first sergeant then verifies the detail, inspects it, replaces any man unfit to go on guard, turns the detail over to the senior noncommissioned officer, and retires. The band takes its place on the parade ground so that the left of its front rank shall be 12 paces to the right of the front rank of the guard when the latter is formed.

**351.** At **adjutant's call**, the adjutant, dismounted, and the sergeant major on his left, marches to the parade ground. The adjutant halts and takes post so as to be 12 paces in front of and facing the center of the guard when formed; the sergeant major continues on, moves by the left flank and takes post facing to the left, 12 paces to the left of the front rank of the band; the band plays [illegible] time; the details are marched to [illegible] noncommissioned officers [illegible]

[Third indorsement.]

OFFICE JUDGE ADVOCATE,
MILITARY DIVISION OF THE PACIFIC,
*May 11, 1883.*

Respectfully returned to the assistant adjutant general, Military Division of the Pacific, concurring fully in the views expressed by Col. Morrow. I was not aware that such a view had ever been questioned. That the period is a time of peace does not affect the authority and duty of the sentinel or guard to fire upon the escaping prisoner, if this escape can not otherwise be prevented. He should, of course, attempt to stop the prisoner before firing by ordering him to halt, and will properly warn him by the words "Halt, or I fire," or words to such effect.

W. WINTHROP, *Judge Advocate.*

[Fourth indorsement.]

HEADQUARTERS MILITARY DIVISION OF THE PACIFIC,
*May 11, 1883.*

Respectfully returned to the commanding general, Department of the Columbia, approving the opinion of the commanding officer, Twenty-first Infantry, and of the judge advocate of the division, in respect to the duty of and method to be adopted by sentinels in preventing prisoners from escaping.

* * * * * * *

By command of Maj. Gen. Schofield:

J. C. KELTON,
*Assistant Adjutant General.*

See also Circular No. 53, A. G. O., December 22, 1900.

**306.** On approaching the post of the sentinel at the guardhouse, a sentinel of the prisoner guard or an overseer in charge of prisoners will halt them and call, "**No. 1, (so many) prisoners.**" He will not allow them to cross the post of the sentinel until so directed by the corporal of the guard.

**307.** Members of the prisoner guard and overseers placed [redacted] prisoners for work will receive specific and explicit instr[redacted] covering the required work; they will be held strict[redacted]

sible that the prisoners under their charge properly and satisfactorily perform the designated work.

## Section 17. Flags.

**337.** The garrison, post, and storm flags are national flags and shall be of bunting. The union of each is as described in paragraph 216, Army Regulations, and shall be of the following proportions: Width, seven-thirteenths of the hoist of the flag; length, seventy-six one-hundredths of the hoist of the flag.

The garrison flag will have 38 feet fly and 20 feet hoist. It will be furnished only to posts designated in orders from time to time from the War Department, and will be hoisted only on holidays and important occasions.

The post flag will have 19 feet fly and 10 feet hoist. It will be furnished for all garrison posts and will be hoisted in pleasant weather.

The storm flag will have 9 feet 6 inches fly and 5 feet hoist. It will be furnished for all occupied posts for use in stormy and windy weather. It will also be furnished to national cemeteries. (A. R. 223.)

**338.** At every military post or station the flag will be hoisted at the sounding of the first note of the reveille, or of the first note of the march, if a march be played before the reveille. The flag will be lowered at the sounding of the last note of the retreat, and while the flag is being lowered the band will play "The Star-Spangled Banner," or, if there be no band present, the field music will sound "to the color." When "to the color" is sounded by the field music while the flag is being lowered the same respect will be observed as when "The Star-Spangled Banner" is played by the band, and in either case officers and enlisted men out of ranks will face toward the flag, stand at attention, and render the prescribed salute at the last note of the music. (A. R. 437.)

The lowering of the flag will be so regulated as to be completed at the last note of "The Star-Spangled Banner" or "to the color."

**339.** The national flag will be displayed at a seacoast or lake fort at the b[illegible] and during an action in which a fort may be engaged [illegible] day or by night. (A. R. 437.)

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has reported, returns the salute with the hand and
he adjutant: **March the guard in review, sir.**
djutant carries saber, faces about, brings the **guard to**
, and commands: 1. **At trail, platoons (or guard) right,**
H, 3. **Guard,** 4. **HALT.**
latoons execute the movement; the band turns to the
l places itself 12 paces in front of the first platoon.
djutant places himself six paces from the flank and
of the commander of the guard; the sergeant major six
om the left flank of the second platoon.
djutant then commands: 1. **Pass in review,** 2. **FOR-**
3. **MARCH.**
uard marches in quick time past the officer of the day,
g to the principles of review, and is brought to **eyes**
the proper time by the commander of the guard; the
t, commander of the guard, leaders of platoons, sergeant
nd drum major salute.
band, having passed the officer of the day, turns to the
the column, places itself opposite and facing him, and
s to play until the guard leaves the parade ground.
ld music detaches itself from the band when the latter
ut of the column, and, remaining in front of the guard,
nces to play when the band ceases.
ng passed 12 paces beyond the officer of the day, the
nt halts; the sergeant major halts abreast of the ad-
and 1 pace to his left; they then return saber, salute,
tire; the commander of the guard then commands: 1.
ns, **right by squads,** 2. **MARCH,** and marches the guard to
t.

officers of the day face toward each other and salute;
officer of the day turns over the orders to the new officer
day.

le the band is sounding off, and while the guard is march-
review, the officers of the day stand at parade rest with
olded. They take this position when the adjutant comes
de rest, resume the attention with him, again take the
rest at the first note of the march in review, and resume
on as the head of the column approaches.

The new officer of the day returns the salute of the commander of the guard and the adjutant, making one salute with the hand.

**356.** If the guard be not divided into platoons, the adjutant commands: 1. **At trail, guard right,** 2. **MARCH,** 3. **Guard,** 4. **HALT,** and it passes in review as above; the commander of the guard is 3 paces in front of its center; the adjutant places himself 6 paces from the left flank and abreast of the commander of the guard; the sergeant covers the adjutant on a line with the front rank.

### Section 21. Informal Guard Mounting for Infantry.

**357.** Informal guard mounting will be held on the parade ground of the organization from which the guard is detailed. If it is detailed from more than one organization, then at such place as the commanding officer may direct.

**358. At assembly,** the detail for guard falls in on the company parade ground. The first sergeant verifies the detail, inspects their dress and general appearance, and replaces any man unfit to march on guard. He then turns the detail over to the commander of the guard and retires.

**359. At adjutant's call,** the officer of the day takes his place 15 paces in front of the center of the guard and commands: 1. **Officer (or officers) and noncommissioned officers,** 2. **Front and center,** 3. **MARCH;** whereupon the officers and noncommissioned officers take their positions, are assigned and sent to their posts as prescribed in formal guard mounting. (Par. **352.**)

The officer of the day will then inspect the guard with especial reference for its fitness for the duty for which it is detailed and will select, as prescribed in paragraphs **140** and **141,** the necessary orderlies and color sentinels. The men found unfit for guard will be returned to quarters and will be replaced by others found to be suitable, if available in the company. If none are available in the company the fact will be reported to the adjutant immediately after guard mounting.

When the inspection shall have been completed the officer of the day resumes his position and directs the commander of the guard to march the guard to its post.

### Section 22. Relieving the Old Guard.

**360.** As the new guard approaches the guardhouse, the old guard is formed in line, with its field music three paces to its right; and, when the field music at the head of the new guard arrives opposite its left, the commander of the new guard commands: 1. **Eyes, RIGHT**; the commander of the old guard commands: 1. **Present**, 2. **ARMS**; commanders of both guards salute. The new guard marches in quick time past the old guard.

When the commander of the new guard is opposite the field music of the old guard, he commands: **FRONT**, the commander of the old guard commands: 1. **Order**, 2. **ARMS**, as soon as the new guard shall have cleared the old guard.

The field music having marched three paces beyond the field music of the old guard, changes direction to the right, and, followed by the guard, changes direction to the left when on a line with the old guard; the changes of direction are without command. The commander of the guard halts on the line of the front rank of the old guard, allows his guard to march past him, and, when its rear approaches, forms it in line to the left, establishes the left guide three paces to the right of the field music of the old guard, and on a line with the front rank, and then dresses his guard to the left; the field music of the new guard is three paces to the right of its front rank.

**361.** The new guard being dressed the commander of each guard, in front of and facing its center, commands: 1. **Present**, 2. **ARMS**, resumes his front, salutes, carries saber, faces his guard, and commands: 1. **Order**, 2. **ARMS**.

Should a guard be commanded by a noncommissioned officer, he stands on the right or left of the front rank, according as he commands the old or new guard, and executes the rifle salute.

**362.** After the new guard arrives at its post and has saluted the old guard, each guard is presented by its commander to its officer of the day; if there be but one officer of the day present, or if one officer acts in the capacity of old and new officer of the day, each guard is presented to him by its commander.

**363.** If other persons entitled to a salute appr[illegible] mander of the guard will bring his own guar[illegible] not already at attention. The senior comm[illegible]

guards will then command: "1. **Old and new guards**, 2. **Present**, 3. **Arms.**"

The junior will salute at the command "**Present Arms**" given by the senior. After the salute has been acknowledged, the senior brings both guards to the order.

**364.** After the salutes have been acknowledged by the officers of the day, each guard is brought to an order by its commander; the commander of the new guard then directs the orderly or orderlies to fall out and report and causes bayonets to be fixed if so ordered by the commanding officer; bayonets will not then be unfixed during the tour except in route marches while the guard is actually marching or when specially directed by the commanding officer.

The commander of the new guard then falls out members of the guard for detached posts, placing them under charge of the proper noncommissioned officers, divides the guard into three reliefs, **first**, **second**, and **third**, from right to left, and directs a list of the guard to be made by reliefs. When the guard consists of troops of different arms combined, the men are assigned to reliefs so as to insure a fair division of duty under rules prescribed by the commanding officer.

**365.** The sentinels and detachments of the old guard are at once relieved by members of the new guard, the two guards standing at ease or at rest while these changes are being made. The commander of the old transmits to the commander of the new guard all his orders, instructions, and information concerning the guard and its duties. The commander of the new guard then takes possession of the guardhouse and verifies the articles in charge of the guard.

**366.** If considerable time is required to bring in that portion of the old guard still on post, the commanding officer may direct that as soon as the orders and property are turned over to the new guard the portion of the old guard at the guardhouse may be marched off and dismissed. In such a case the remaining detachment or detachments of the old guard will be inspected by the commander of the new guard when they reach the guardhouse. He will direct the senior noncommissioned officer present to march these detachments off and dismiss them in the prescribed manner.

**367.** In bad weather, at night, after long marches, or when the [illegible]ery small, the field music may be dispensed with.

CHAPTER V.

# MAP READING AND SKETCHING.

## Section 1. Military Map Reading.

When you pick up a map, the first question is, Where is the north? This can usually be told by an arrow (see fig. 1, p. 196) which will be found in one of the corners of the map, and which points to the true north—the north of the north star.

On some maps no arrow is to be found. The chances are a hundred to one that the north is at the top of the map, as it is on almost all printed maps. But you can only assure yourself of that fact by checking the map with the ground it represents. For instance, if you ascertain that the city of Philadelphia is due east of the city of Columbus, then the Philadelphia-Columbus line on the map is a due east-and-west line, and establishes at once all the other map directions.

Now, the map represents the ground as nearly as it can be represented on a flat piece of paper. If you are standing up, facing the north, your right hand will be in the east, your left in the west, and your back to the south. It is the same with a map; if you look across it in the direction of the arrow—that is, toward its north—your right hand will be toward what is east on the map; your left hand to the west; the south will be at the bottom of the map.

There is another kind of an arrow that sometimes appears on a map. It is like the one in figure 2, page 196, and points not to the true north but to the magnetic north, which is the north of the compass. Though the compass needle, and therefore the arrow that represents it on the map, does not point exactly north, the deviation is, from a military point of view, slight and appreciable error will rarely result through the u magnetic instead of the true north in the solution of tary problems.

Fig. 1.

Fig. 2.

Fig. 5.

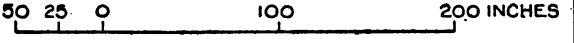



Fig. 3.

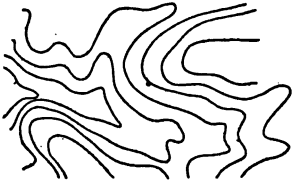


Fig. 4.

Should you be curious to know the exact deviation, consult your local surveyor or any civil engineer.

Both arrows may appear on your map. In that case disregard the magnetic arrow unless you are using the map in connection with a compass.

If a map is being used on the ground, the first thing to be done is to put the lines of the map parallel to the real outlines of the ground forms, and roads, fences, railroads, etc., that the map shows; for the making of a map is no more than the drawing on paper of lines parallel to and proportional in length to real directions and distances on the ground.

For instance, the road between two places runs due north and south. Then on the map a line representing the road will be parallel to the arrow showing the north and will be proportional in length to the real road. In this way a map is a picture, or, better, a bare outline sketch; and, as we can make out a picture, though it be upside down, or crooked on the wall, so we can use a map that is upside down or not parallel to the real ground forms. But it is easier to make out both the picture and the map if their lines are parallel to what they represent. So in using a map on the ground we always put the lines parallel to the actual features they show. This is easy if the map has an arrow.

If the map has no arrow, you must locate objects or features on the ground, and on the map, their representations. Draw on the map a line connecting any two of the features; place this line parallel to an imaginary line through the two actual features located, and your map will be correctly placed. Look to it that you do not reverse on the map the positions of the two objects or features, or your map will be exactly upside down.

When the map has been turned into the proper position—that is to say, "oriented"—the next thing is to locate on the map your position. If you are in the village of Easton and there is a place on the map labeled Easton, the answer is apparent. But if you are out in the country at an unlabeled point that looks like any one of a dozen other similar points, the task is more complicated. In this latter case you must locate and

identify, both on the map and on the ground, other points—hills, villages, peculiar bends in rivers, forests—any ground features that have some easily recognizable peculiarity and that you can see from your position.

Suppose, for instance, you were near Leavenworth and wanted to locate your exact position, of which you are uncertain. You have the map shown in this manual, and, looking about, you see southwest from where you stand the United States Penitentiary; also, halfway between the south and the southeast—south-southeast a sailor would say—the reservoir (rectangle west of "O" in "Missouri"). Having oriented your map, draw on it a line from the map position of the reservoir toward the actual position on the ground. Similarly draw a line from the map position of penitentiary toward its actual position. Prolong the two lines until they intersect. The intersection of the lines will mark the place where you stand—south Merritt Hill.

This method consists merely in drawing on the map lines that represent the lines of sight to known and visible places. The lines pass through the map position of the places you see and are parallel to the actual lines of sight; therefore they are the map representations of the lines of sight, and their intersection is the map position of the eye of the observer.

After this orientation and location of position, one can deduce from the map everything there is to know in regard to directions. In this respect, study of the ground itself will show no more than will study of the map.

After "What direction?" comes "How far?" To answer this, one must understand that the map distance between any two points shown bears a fixed and definite relation or proportion to the real distance between the two points.

For instance: We measure on a map and find the distance between two points to be 1 inch. Then we measure the real distance on the ground and find it to be 10,000 inches; hence the relation between the map distance and the real distance is 1 to 10,000, or $\frac{1}{10000}$. Now, if the map is properly drawn, the same relation will hold good for all distances, and we can obtain any ground distance by multiplying by 10,000 the corresponding map distance.

This relation need not be $\frac{1}{100000}$, but may be anything from $\frac{1}{100}$ that an architect might use in making a map or plan of a house up to one over a billion and a half, which is about the proportion between map and real distances in a pocket-atlas representation of the whole world on a 6-inch page. Map makers call this relation the "scale" of the map and put it down in a corner in one of three ways.

For the sake of an illustration, say the relation between map and ground distances is 1 to 100; that is, 1 inch on the map is equal to 100 on the ground. The scale may be written:

First. 1 inch equals 100.

Second. $\frac{1}{100}$.

Third. As shown by figure 3 (p. 196).

These expressions mean one and the same thing. A variation of the first method on a map of different scale might be: 1 inch equals 1 mile. Since a mile contains 63,360 inches, then the real distance between any two points shown on the map is 63,360 times the map distance.

To find the ground distance by the third kind of scale, copy it on the edge of a slip of paper, apply the slip directly to the map, and read off the distance; and so we answer the question, "How far?"

After direction and distance comes the interpretation of the signs, symbols, and abbreviations on the map. Those authorized are given on pages 209 and 210 (a reprint of Appendix 4, Field Service Regulations, 1914); but there are a good many other conventional signs in common use. A key to them is published by the War Department, and is called "Conventional Signs, United States Army." From these you read at once the natural and artificial features of the country shown on your map. It should be borne in mind that these conventional signs are not necessarily drawn to scale, as are the distances. They show the position and outline of the features rather than the size. This, for the reason that many of the features shown, if drawn to scale, would be so small that one could not make them out except with a magnifying glass. If the exact dimensions are of any importance, they will be written in figures on the map. For instance, bridges.

In addition to the above conventional signs, we have **contours** to show the elevations, depressions, slope, and shape of the ground. Abroad, **hachures** are much used, but they serve only to indicate elevation, and, as compared to contours, are of little value. Contours resemble the lines shown in figure 4 (p. 196). Hachures are shown in figure 5 (p. 196), and may be found on any European map. They simply show slopes, and, when carefully drawn, show steeper slopes by heavier shading and gentler slopes by the fainter hachures. The crest of the mountain is within the hachures. (See fig. 5, p. 196.)

*Contours.*—A certain student, when asked by his instructor to define "space," said: "I have it, sir, in my head, but can not put it into words." The instructor replied: "I suppose that under those circumstances, Mr. ———, the definition really would not help much." And so it is with contours—the definition does not help much if you know a contour when you meet it on a map. For examples of contours, turn to the map facing page 210, and, starting at the United States penitentiary, note the smooth, flowing, irregular curved lines marked 880, 860, 840, 840, 860, etc.

The only other lines on the map that at all resemble contours are stream lines, like "Corral Creek," but the stream lines are readily distinguished from contours by the fact that they cross the contours squarely, while the contours run approximately parallel to each other. Note the stream line just to the west of South Merritt Hill.

The contours represent lines on the ground that are horizontal and whose meanderings follow the surface, just as the edge of a flood would follow the irregularities of the hills about it. Those lines that contours stand for are just as level as the water's edge of a lake, but horizontally they wander back and forth to just as great a degree.

The line marked 880, at the penitentiary, passes through on that particular piece of ground every point that is 880 feet above sea level. Should the Missouri River rise in flood to 880 feet, the penitentiary would be on an island, the edge of which is marked by the 880 contour.

Contours show several things; among them the height of the ground they cross. Usually the contour has labeled on it in

figures the height above some starting point, called the **datum plane**—generally sea level. If, with a surveying instrument, you put in on a piece of ground a lot of stakes, each one of which is exactly the same height above sea level—that is, run a line of levels—then make a map showing the location of the stakes, a line drawn on the map through all the stake positions is a contour and shows the position of all points of that particular height.

On any given map all contours are equally spaced in a vertical direction, and the map shows the location of a great number of points at certain fixed levels. If you know the vertical interval between any two adjacent contours, you know the vertical interval for all the contours on that map, for these intervals on a given map are all the same.

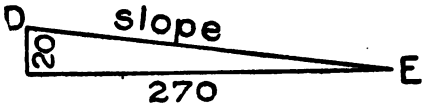
With reference to a point through which no contour passes, we can only say that the point in question is not higher than the next contour up the hill, nor lower than the next one down the hill. For the purposes of any problem, it is usual to assume that the ground slopes evenly between the two adjacent contours and that the vertical height of the point above the lower contour is proportional to its horizontal distance from the contour, as compared to the whole distance between the two contours. For instance, on the map, find the height of point A. The horizontal measurements are as shown on the map. The vertical distance between the contours is 20 feet. A is about one-quarter of the distance between the 800 and the 820 contours, and we assume its height to be one-quarter of 20 feet (5 feet) higher than 800 feet. So the height of A is 805 feet.

The vertical interval is usually indicated in the corner of the map by the letters "V. I." For instance: V. I.=20 feet.

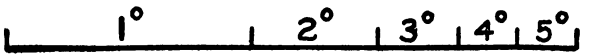
On maps of very small pieces of ground, the V. I. is usually small—perhaps as small as 1 foot; on maps of large areas on a small scale it may be very great—even 1,000 feet.

Contours also show **slopes.** It has already been explained that from any contour to the next one above it the ground rises a fixed number of feet, according to the vertical interval of that map. From the scale of distances on the map the horizontal distance between any two contours can be found. For example: On the map the horizontal distance between D

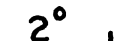
yards, or 270 feet. The vertical distance is 20 feet the V. I. of the map. The slope then is $\frac{20}{270}=\frac{1}{13.5}=7\frac{1}{2}\%=4\frac{1}{2}°$, in all of which different ways the slope can be expressed.




On a good many contoured maps a figure like this will be found in one of the corners:




On that particular map contours separated by the distance

on the vertical scale show a slope of 1°; if separated by the distance 
 they show a 2° slope, etc. A slope of 1° is a rise of 1 foot in 57. To use this scale of slopes copy it on the edge of a piece of paper just as you did the scale of distances and apply it directly to the map.

You will notice that where the contours lie closest the slope is steepest; where they are farthest apart the ground is most nearly flat.

It has already been set forth how contours show height and slope; in addition to this they show the shape of the ground, or GROUND FORMS. Each single contour shows the shape at its particular level of the hill or valley it outlines; for instance, the 880 contour about the penitentiary shows that the hill at that level has a shape somewhat like a horse's head. Similarly, every contour on the map gives us the form of the ground at its

particular level, and knowing these ground forms for many levels we can form a fair conception of what the whole surface is like.

A round contour like the letter O outlines a round ground feature; a long narrow one indicates a long narrow ground feature.

Different hills and depressions have different shapes. A good many of them have one shape at one level and another shape at another level, all of which information will be given you by the contours on the map.

One of the ways to see how contours show the shape of the ground is to pour half a bucket of water into a small depression in the ground. The water's edge will be exactly level, and if the depression is approximately round the water's edge will also be approximately round. The outline will look something like figure 6.

Draw roughly on a piece of paper a figure of the same shape and you will have a contour showing the shape of the bit of ground where you poured your water.

Next, with your heel gouge out on one edge of your little pond a small round bay. The water will rush in and the water-mark on the soil will now be shaped something like figure 7.

Alter your drawing accordingly, and the new contour will show the new ground shape.

Again do violence to the face of nature by digging with a stick a narrow inlet opening out of your miniature ocean, and the watermark will now look something like figure 8.

Alter your drawing once more and your contour shows again the new ground form. Drop into your main pond a round clod and you will have a new watermark, like figure 9, to add to your drawing. This new contour, of the same level with the one showing the limit of the depression, shows on the drawing the round island.

Drop in a second clod, this time long and narrow, the water-mark will be like figure 10, and the drawing of it, properly placed, will show another island of another shape. Your drawing now will look like figure 11.

It shows a depression a[illegible] open a round bay and a long [illegible]

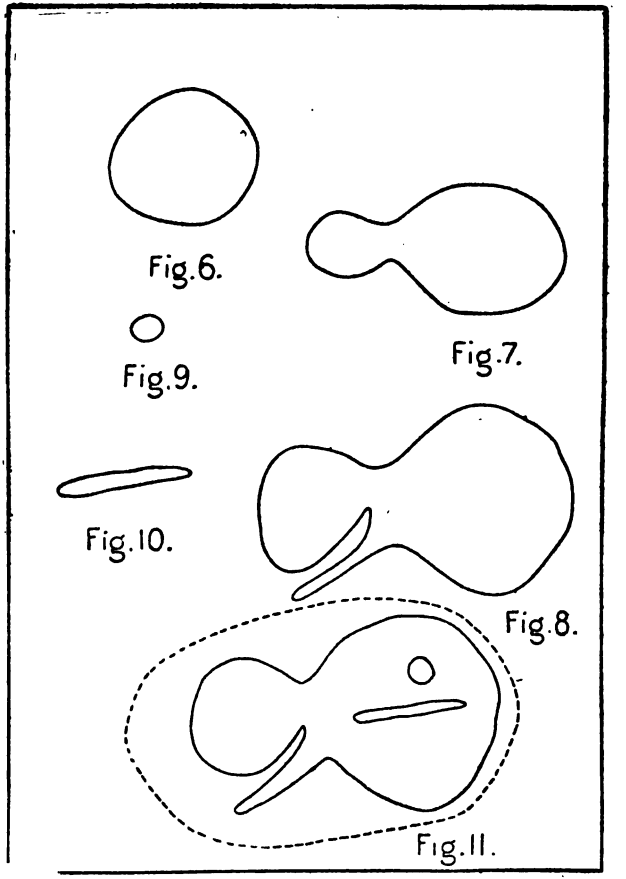


Fig.6.
Fig.7.
Fig.9.
Fig.10.
Fig.8.
Fig.11.

tion and a long, narrow one; a long, narrow ridge, jutting out between the two bays, and a short, broad one across the neck of the round bay.

Now flood your lake deeply enough to cover up the features you have introduced. The new water line, about as shown by the dotted line in figure 11, shows the oblong shape of the depression at a higher level; the solid lines show the shape farther down; the horizontal distance between the two contours at different points shows where the bank is steep and where the slope is gentler.

Put together the information that each of these contours gives you, and you will see how contours show the shape of the ground. On the little map you have drawn you have introduced all the varieties of ground forms there are; therefore all the contour forms.

The contours on an ordinary map seem much more complicated, but this is due only to the number of them, their length, and many turns before they finally close on themselves. Or they may close off the paper. But trace each one out, and it will resolve itself into one of the forms shown in figure 11.

Just as the high-tide line round the continents of North and South America runs a long and tortuous course, but finally closes back on itself, so will every contour do likewise. And just as truly as every bend in that high-tide mark turns out around a promontory, or in around a bay, so will every bend in a contour stand for a hill or a valley, pointing to the lowlands if it be a hill, and to the height if it mark a valley.

If the map embrace a whole continent or an island, all the contours will be of closed form, as in figure 11, but if it embrace only a part of the continent or island, some of the contours will be chopped off at the edge of the map, and we have the open form of contours, as we would have if figure 11 were cut into two parts.

The closed form may indicate a hill or a basin; the open form, a ridge or a valley; sometimes a casual glance does not indicate which.

Take up, first, the contour of the open type. If the map shows a stream running down the inside of the contour, there is no difficulty in saying at once that the ground feature is a valley; for instance, V, V, V, and the valley of Corral Creek on t[redacted]

map. But if there is no stream line, does the contour bend show a valley or a ridge?

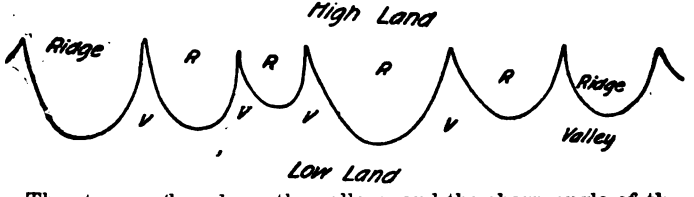
First of all, there is a radical difference between the bend of a contour round the head of a valley and its bend round the nose of a ridge.

Compare on the map the valleys V and the ridges R. The bend of the contour round the head of the valley is much sharper than the bend of the contour round the nose of the ridge. This is a general truth, not only in regard to maps, but also in regard to ground forms. Study any piece of open ground and note how much wider are the ridges than the valleys. Where you find a "hog back" or "devil's backbone," you have an exception to the rule, but the exceptions are not frequent enough to worry over.

To tell whether a given point is on a ridge or in a valley, start from the nearest stream shown on the map and work across the map to the undetermined point, keeping in mind that in a real trip across the country you start from the stream, go up the hill to the top of a ridge, down the other side of the hill to a watercourse, then up a hill to the top of a ridge, down again, up again, etc. That is all traveling is—valley, hill, valley, hill. valley, etc., though you wander till the crack o' doom. And so your map travels must go—valley, hill, valley, hill—till you run off the map or come back to the starting point.

On the map, follow the R–V line, V indicating valley and R ridge or hill. Note first the difference in sharpness in the contour bends; also how the valley contours point to the highland and the ridge contours to the lowland.

The contours go thus:




The streams flow down the valleys, and the sharp angle of the contour points always *up* stream. Note also how the junction

of a stream and its tributary usually makes an angle that points *down* stream.

"Which way does this stream run?"

Water flows down hill. If you are in the bed of a stream, contours representing higher ground must be to your right and to your left. Get the elevations of these contours. Generally the nearest contour to the bank of the stream will cross the stream and there will be an angle or sharp turn in the contour at this crossing. If the point of the angle or sharp turn is toward you, you are going downstream; if away from you, you are going upstream.

If the contours are numbered, you have only to look at the numbers to say where the low and where the high places are; but to read a map with any speed one must be quite independent of these numbers. In ordinary map reading look, first of all, for the stream lines. The streams are the skeleton upon which the whole map is hung. Then pick out the hilltops and ridges and you have a body to clothe with all the details that will be revealed by a close and careful study of what the map maker has recorded.

As to closed contours, they may outline a depression or a hill. On the map, "881" or "885" might be hills or ponds, as far as their shape is concerned. But, clearly, they are hills, for on either side are small streams running *away* from them. If they were ponds, the stream lines would run *toward* the closed contours. The test of "hill, valley, hill," will always solve the problem when there are not enough stream lines shown to make evident at once whether a closed contour marks a pond or a hill. Look in the beginning for the stream lines and valleys, and, by contrast, if for no other reason, the hills and ridges at once loom up.

To illustrate the subject of contours to aid those who have difficulty in reading contoured maps the following is suggested:

1. Secure modeling clay and build a mound.

2. Use wire and slice this mound horizontally at equal vertical intervals into zones; then insert vertical dowels through the mound of clay.

3. Remove the top zone, place on paper, and dr[redacted] the bottom edge. Trim your paper roughly to [redacted]. Indicate where the holes made by the dow[redacted]

4. Do the above with each zone of your mound.

5. Place these papers in proper order on dowels similarly placed to ones in original mound at, say, 1 inch vertical interval apart. A skeleton mound results.

6. Replace the zones of the clay mound and from the original clay mound along the side of skeleton mound.

7. Now force all the paper sheets down the dowels onto the bottom sheet, and we have a map of clay mound with contours.

NOTE.—One-inch or 2-inch planks can be made into any desired form by the use of dowels and similar procedure followed.

People frequently ask, "What should I see when I read a map?" and the answer is given, "The ground as it is." This is not true any more than it is true that the words, "The valley of the Meuse," bring to your mind vine-clad hills, a noble river, and green fields where cattle graze. Nor can any picture ever put into your thought what the Grand Canyon really is. What printed word or painted picture can not do, a map will not. A map says to you, "Here stands a hill," "Here is a valley," "This stream runs so," and gives you a good many facts in regard to them. But you do not have to "see" anything, any more than you have to visualize Liege in order to learn the facts of its geography. A map sets forth cold facts in an alphabet all its own, but an easy alphabet, and one that tells with a few curving lines more than many thousand words could tell

### Section 2. Sketching.

Noncommissioned officers and selected privates should be able to make simple route sketches. This is particularly useful in patrolling, as thereby a patrol leader is able to give his commander a good idea of the country his patrol has traversed. Sketches should be made on a certain scale, which should be indicated on the sketch, such as 3 inches on the sketch equals 1 mile on the ground. The north should be indicated on the sketch by means of an arrow pointing in that direction. Any piece of paper may be used to make the sketch on. The back of the field-message blank is ruled and prepared for this purpose. The abbreviations and conventional signs shown on the following pages should be used in making such simple sketches.

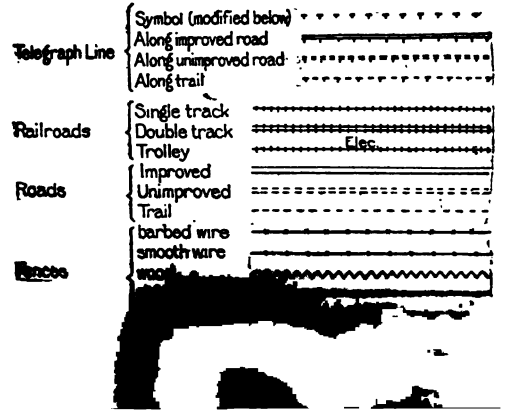
## Field Maps and Sketches.

The following abbreviations and signs are authorized for use on field maps and sketches. For more elaborate map work the authorized conventional signs as given in the manual of "Conventional Signs, United States Army Maps," are used. Abbreviations other than those given should not be used.

ABBREVIATIONS.

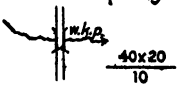
| | | | | | |
|---|---|---|---|---|---|
| A. | Arroyo. | G. S. | General Store. | Pt. | Point. |
| abut. | Abutment. | gir. | Girder. | q.p | Queen-post |
| Ar. | Arch. | G. M. | Gristmill. | R. | River. |
| b. | Brick. | I. | Iron. | R. H. | Roundhouse. |
| B. S. | Blacksmith Shop. | I. | Island. | R. R. | Railroad. |
| bot. | Bottom. | jc. | Junction. | S. | South. |
| Br. | Branch. | k.p. | King-post. | s. | Steel. |
| br. | Bridge. | L. | Lake. | S. H. | Schoolhouse. |
| C. | Cape. | Lat. | Latitude. | S. M. | Sawmill. |
| cem. | Cemetery. | Ldg. | Landing. | Sta. | Station. |
| con. | Concrete. | L. S. S. | Life-Saving Station. | st. | Stone. |
| cov. | Covered. | L. H. | Lighthouse | str. | Stream. |
| Cr. | Creek. | Long. | Longitude. | T. G. | Tollgate. |
| d. | Deep. | Mt. | Mountain. | Tres. | Trestle. |
| cul. | Culvert. | Mts. | Mountains. | tr. | Truss. |
| D. S. | Drug Store. | N. | North. | W. T. | Water Tank. |
| E. | East. | n. f. | Not fordable. | W. W. | Water Works. |
| Est. | Estuary. | P. | Pier. | W. | West. |
| f. | Fordable. | pk. | Plank. | w. | Wood. |
| Ft. | Fort. | P. O. | Post Office. | wd. | Wide. |

SIGNS—FIELD MAPS AND SKETCHES.



Bridge

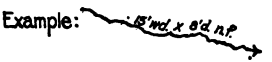
Indicate character and span by abbreviations.

Example: 


Meaning wooden king post bridge, 40 feet long, 20 feet wide, and 10 feet above the water.

Streams

Indicate character by abbreviations.

Example: 


Meaning a stream 15 feet wide, 8 feet deep, and not fordable.

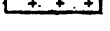
House ▪ Church ⁂ School house ⁂S.H.

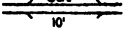
Woods

Orchards
Cultivated Land

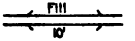

If boundary lines are fences they are indicated as such.

Brush, crops or grass, important as cover or forage


Cemetery 
Trees, isolated 

Cut and fill — 

cut 10 feet deep



fill 10 feet high

1073
1065
1055
Atchison
Cross
HANCOCK
CANAL
62
TRUE NORTH
MAG NORTH
1909
1 Mile.
2000 Yards.

## CHAPTER VI.

# MESSAGE BLANKS.

| U. S. ARMY FIELD MESSAGE. | No. \| Sent by. \| Time. \| Re 'd by. \| Time. \| Check. (These spaces for Signal Operators only.) |
|---|---|
| Communicated by **Buzzer, Phone, Telegraph, Wireless, Lantern, Helio, Flag, Cyclist, Foot Messenger, Mounted Messenger, Motor Car, Flying Machine.** Underscore means used. | [Name of sending detachment.]<br>*From*.....<br>[Location of sending detachment.]<br>*At* .....<br>*Date*..... *Hour*..... *No*.... |
| *To*..... | |
| *Received*..... | |

The heading "From" is filled in with the *name* of the detachment sending the information; as "Officer's Patrol, 7th Cav." Messages sent on the same day from the same source to the same person are numbered consecutively. The address is written briefly, thus: "Commanding officer, Outpost, 1st Brigade." In the signature the writer's surname only and rank are given.

This blank is four and a half by six and three quarters inches, including the margin on the left for binding. The back is ruled in squares, the side of each square representing 100 yards on a scale of 3 inches to one mile, for use in making simple sketches explanatory of the message. It is issued by the Signal Corps in blocks of forty with duplicating sheets. The regulation envelope is three by five and one-fourth inches and is printed as follows:

**UNITED STATES ARMY FIELD MESSAGE.**

*To*..... *No*....
(For signal operator only.)

*When sent*..... *No*....
*Rate of speed*.....
*Name of messenger*.....
*When and by whom rec'd*.....

**This Envelope will be Returned to Bearer.**

## CHAPTER VII.

# SIGNALS AND CODES.

[Extracts from Signal Book, United States Army, 1916.]

### General Instructions for Army Signaling.

1. Each signal station will have its call, consisting of one or two letters, as Washington, "W"; and each operator or signalist will also have his personal signal of one or two letters, as Jones, "Jo." These being once adopted will not be changed without due authority.

2. To lessen liability of error, numerals which occur in the body of a message should be spelled out.

3. In receiving a message the man at the telescope should call out each letter as received, and not wait for the completion of a word.

4. A record of the date and time of the receipt or transmission of every message must be kept.

5. The duplicate manuscript of messages received at, or the original sent from, a station should be carefully filed.

6. In receiving messages nothing should be taken for granted, and nothing considered as seen until it has been positively and clearly in view. Do not anticipate what will follow from signals already given. Watch the communicating station until the last signals are made, and be very certain that the signal for the end of the message has been given.

7. Every address must contain at least two words and should be sufficient to secure delivery.

8. All that the sender writes for transmission after the word "To" is counted.

9. Whenever more than one signature is attached to a message count all initials and names as a part of the message.

10. Dictionary words, initial letters, surnames of persons, names of cities, towns, villages, States, and Territories, or names of the Canadian Provinces will be counted each as one word; e. g., New York, District of Columbia, East St. Louis should each be counted as one word. The abbreviation of the names of cities, towns, villages, States, Territories, and provinces will be counted the same as if written in full.

11. Abbreviations of weights and measures in common use, figures, decimal points, bars of division, and in ordinal numbers the affixes "st," "d," "nd," "rd," and "th" will be each counted as one word. Letters and groups of letters, when such groups do not form dictionary words and are not combinations of dictionary words, will be counted at the rate of five letters or fraction of five letters to a word. When such groups are made up of combinations of dictionary words, each dictionary word so used will be counted.

12. The following are exceptions to paragraph 55, and are counted as shown:

| | |
|---|---|
| A. M. | 1 word |
| P. M. | 1 word |
| O. K. | 1 word |
| Per cent | 1 word |

13. No message will be considered sent until its receipt has been acknowledged by the receiving station.

### The International Morse or General Service Code.

14. The International Morse Code is the General Service Code and is prescribed for use by the Army of the United States and between the Army and the Navy of the United States. It will be used on radio systems, submarine cables using siphon recorders, and with the heliograph, flash-lantern, and all visual signaling apparatus using the wigwag.

*Alphabet.*

| | | | |
|---|---|---|---|
| A | • — | N | — • |
| B | — • • • | O | — — — |
| C | — • — • | P | • — — • |
| D | — • • | Q | — — • — |
| E | • | R | • — • |
| F | • • — • | S | • • • |
| G | — — • | T | — |
| H | • • • • | U | • • — |
| I | • • | V | • • • — |
| J | • — — — | W | • — — |
| K | — • — | X | — • • — |
| L | • — • • | Y | — • — — |
| M | — — | Z | — — • • |

*Numerals.*

| | | | |
|---|---|---|---|
| 1 | • — — — — | 6 | — • • • • |
| 2 | • • — — — | 7 | — — • • • |
| 3 | • • • — — | 8 | — — — • • |
| 4 | • • • • — | 9 | — — — — • |
| 5 | • • • • • | 0 | — — — — — |

*Punctuation.*

| | |
|---|---|
| Period | • • • • • • |
| Comma | • — • — • — |
| Interrogation | • • — — • • |
| Hyphen or dash | — • • • • — |
| Parentheses (before and after the words) | — • — — • — |
| Quotation mark (beginning and ending) | • — • • — • |
| Exclamation | — — • — • — — |
| Apostrophe | • — — — — • |
| Semicolon | — • — • — • |
| Colon | — — — • • • |
| Bar indicating fraction | — • • — • |
| Underline (before and after the word or words it is wished to underline) | • • — — • — |
| Double dash (between preamble and address, between address and body of message, between body of message and signature, and immediately before a fraction) | — • • • — |
| Cross | • — • — • |

## Visual Signaling in General.

**21.** Methods of visual signaling are divided as follows:

(*a*) By flag, torch, hand lantern, or beam of searchlight (without shutter). (General Service Code.)

(*b*) By heliograph, flash lantern, or searchlight (with shutter). (General Service Code.)

(*c*) By Ardois. (General Service Code.)

(*d*) By hand flags or by stationary semaphore. (Two-arm semaphore Code.)

(*e*) By preconcerted signals with Coston lights, rockets, bombs, Very pistols, small arms, guns, etc.

(*f*) By flag signals by permanent hoists. (International Code.)

**22.** The following conventional signals, with exceptions noted, will be used in the first four classes.

| | | *Exceptions.* Ardois and semaphore. |
|---|---|---|
| End of word. | Interval. | |
| End of sentence. | Double interval. | |
| End of message. | Triple interval. | |
| Signal separating preamble from address; address from text; text from signature. | —•••— | Double interval, signature preceded also by "Sig." Interval. |
| Acknowledgment. | R. | |
| Error. | •••••••• | A. |
| Negative. | K. | |
| Preparatory. | L. | |
| Annulling. | N. | |
| Affirmative. | P. | |
| Interrogatory. | ••——•• | O. |
| Repeat after word. | Interrogatory. A (word). | |
| Repeat last message. | Interrogatory three times. | |
| Send faster. | QRQ | |
| Send slower. | QRS | |
| Cease sending. | QRT | |
| Wait a moment. | •—••• | None. |
| Execute. | IX, IX | |
| Move to your right. | MR | |
| Move to your left. | ML | |
| Move up. | MU | |
| Move down. | MD | |
| Finished (end of work). | •••—•— | None. |

## Visual Signaling: By Flag (Wig-Wag), Torch, Hand Lantern, or Beam or Searchlight (Without Shutter).

### GENERAL SERVICE CODE.

**23.** For the flag used with the General Service Code there are three motions and one position. The position is with the flag held vertically, the signalman facing directly toward the station with which it is desired to communicate. The first motion (the dot) is to the right of the sender, and will embrace an arc of 90°, starting with the vertical and returning to it, and will be made in a plane at right angles to the line connecting the two stations. The second motion (the dash) is a similar motion to the left of the sender. The third motion (front) is downward directly in front of the sender and instantly returned upward to the first position. Front is used to indicate an interval.

**24.** The beam of the searchlight, though ordinarily used with the shutter like the heliograph, may be used for long-distance signaling, when no shutter is suitable or available, in a similar manner to the flag or torch, the first position being a vertical one. A movement of the beam 90° to the right of the sender indicates a dot, a similar movement to the left indicates a dash; the beam is lowered vertically for front.

**25.** To use the torch or hand lantern, a foot light must be employed as a point of reference to the motion. The lantern is most conveniently swung out upward to the right of the foot-light for a dot, to the left for a dash, and raised vertically for front.

NOTE.—To call a station, make the call letter until acknowledged, at intervals giving the call or signal of the calling station. If the call letter of a station is unknown, wave flag until acknowledged. In using the searchlight without shutter throw the beam in a vertical position and move it through an arc of 180° in a plane at right angles to the line connecting the two stations until acknowledged. To acknowledge a call, signal "Acknowledgment" followed by the call letter of the acknowledging station.

## Signaling with Heliograph, Flash Lantern, and Searchlight (With Shutter).

### GENERAL SERVICE CODE.

**26.** The first position is to turn a steady flash on the receiving station. The signals are made by short and long flashes. Use a short flash for dot and a long steady flash for dash. The elements of a letter should be slightly longer than in sound signals.

**27.** To call a station, make its call letter until acknowledged.

**28.** If the call letter of a station be unknown, signal A until acknowledged. Each station will then turn on a steady flash and adjust. When adjustment is satisfactory to the called station, it will cut off its flash and the calling station will proceed with its message.

**29.** If the receiver sees that the sender's mirror or light needs adjustment, he will turn on a steady flash until answered by a steady flash. When the adjustment is satisfactory the receiver will cut off his flash and the sender will resume his message.

**30.** To break the sending station for other purposes, turn on a steady flash.

### SOUND SIGNALS.

**56.** Sound signals made by the whistle, foghorn, bugle, trumpet, and drum may well be used in a fog, mist, falling snow, or at night. They may be used with the dot and dash code.

In applying the General Service Code to whistle, foghorn, bugle, or trumpet, one short blast indicates a dot and one long blast a dash. With the drum, one tap indicates a dot and two taps in rapid succession a dash. Although these signals can be used with a dot and dash code, they should be so used in connection with a preconcerted or conventional code.

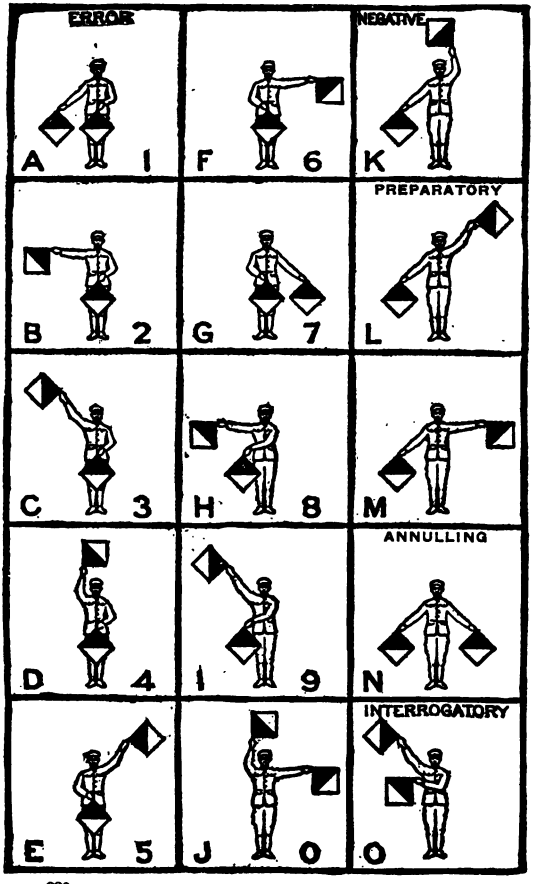
## Signaling by Two-Arm Semaphore.

### HAND FLAGS.

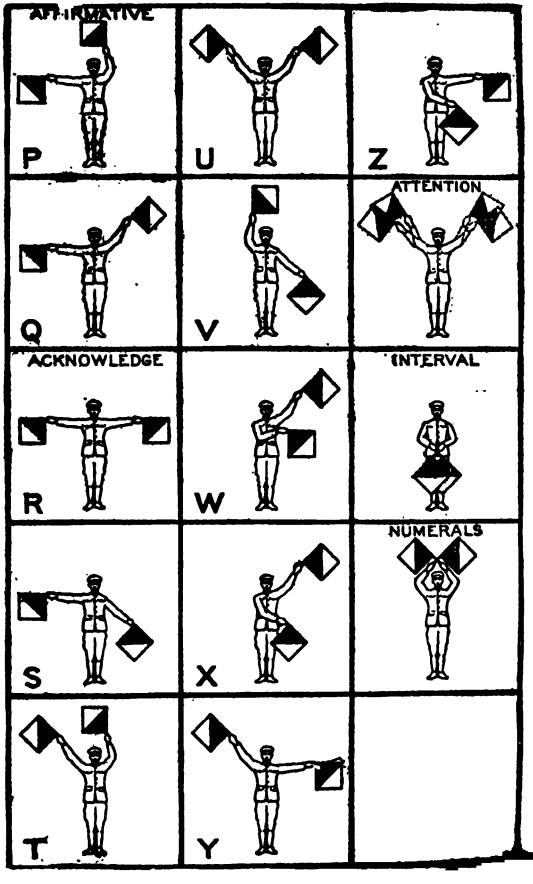
**43.** Signaling by the two-arm semaphore is the most rapid method of sending spelled-out messages. It is, however, very liable to error if the motions are slurred over or run together in an attempt to make speed. Both arms should move rapidly and simultaneously, but there should be a perceptible pause at the end of each letter before making the movements for the next letter. Rapidity is secondary to accuracy. For alphabet see pages following.

NOTE.—In making the interval the flags are crossed downward in front of the body (just above the knees); the double interval is the "chop-chop" signal made twice; the triple interval is "chop-chop" signal made three times. In calling a station face it squarely and make its call. If there is no immediate reply wave the flags over the head to attract attention, making the call at frequent intervals. When the sender makes "end of message" the receiver, if message is understood, extends the flags horizontally and waves them until the sender does the same, when both leave their stations. Care must be taken with hand flags to hold the staffs so as to form a prolongation of the arms.

# THE TWO-ARM SEMAPHORE CODE.



## THE TWO-ARM SEMAPHORE CODE—Continued.



## Letter Codes.

### INFANTRY.

**47.** For use with General Service Code or semaphore hand flags.

| Letter of alphabet. | If signaled from the rear to the firing line. | If signaled from the firing line to the rear. |
|---|---|---|
| AM | Ammunition going forward. | Ammunition required. |
| CCC | Charge (mandatory at all times). | Am about to charge if no instructions to the contrary. |
| CF | Cease firing. | Cease firing. |
| DT | Double time or "rush." | Double time or "rush." |
| F | Commence firing. | |
| FB | Fix bayonets. | |
| FL | Artillery fire is causing us losses. | |
| G | Move forward. | Preparing to move forward. |
| HHH | Halt. | |
| K | Negative. | Negative. |
| LT | Left. | Left. |
| O (Ardois and semaphore only.) | What is the (R. N., etc.)? Interrogatory. | What is the (R. N., etc.)? Interrogatory. |
| • • — — • • (All methods but ardois and semaphore.) | What is the (R. N., etc.)? Interrogatory. | What is the (R. N., etc.)? Interrogatory. |
| P | Affirmative. | Affirmative. |
| RN | Range. | Range. |
| RT | Right. | Right. |
| SSS | Support going forward. | Support needed. |
| SUF | Suspend firing. | Suspend firing. |
| T | Target. | Target. |

### CAVALRY.

**48.** For use with General Service Code or semaphore hand flags.

AM—Ammunition going forward (if signaled from the rear to the front).
Ammunition required (if signaled from the front).
CCC—Charge (if signaled from the rear to the front).
About to charge if no instructions to the contrary (if signaled from the front).
CF—Cease firing.
DT—Double time, rush, or hurry.
F—Commence firing.
FL—Artillery fire is causing us losses.
G—Move forward (if signaled from the rear to the front).
Preparing to move forward (if signaled from the front).
HHH—Halt.
K—Negative.
LT—Left.
M—Bring up the horses (if signaled from front to rear).
Horses going forward (if signaled from rear to front).
O—What is the (R. N., etc)? Interrogatory. (Ardois and semaphore only.)
. . — — — . .—What is the (R. N., etc.)? Interrogatory. (All methods but ardois and semaphore.)
P—Affirmative.
R—Acknowledgment.
RN—Range.
RT—Right.
SSS—Support going forward (if signaled from the rear to the front).
Support needed (if signaled from the front).
SUF—Suspend firing.
T—Target.

### FIELD ARTILLERY.

**49.** For use with General Service Code or semaphore hand flags.

. . . . . .—Error. (All methods but ardois and semaphore.)
A—Error. (Ardois and semaphore only.)
AD—Additional.
AKT—Draw ammunition from combat train.
AL—Draw ammunition from limbers.
AM—Ammunition going forward.
AMC—At my command.
AP—Aiming point.
B (numerals)—Battery (so many) rounds.
BS (numerals)—(Such.) Battalion station.
BL—Battery from the left.
BR—Battery from the right.
CCC—Charge (mandatory at all times). Am about to charge if not instructed to contrary.
CF—Cease firing.
CS—Close station.

CT—Change target.
D—Down.
DF—Deflection.
DT—Double time. Rush. Hurry.
F—Commence firing.
FCL (numerals)—On 1st piece close by (so much).
FL—Artillery fire is causing us losses.
FOP (numerals)....On 1st piece open by (so much).
G.....Move forward. Preparing to move forward.
HHH.....Halt. Action suspended.
IX.....Execute. Go ahead. Transmit.
JI.....Report firing data.
K.....Negative. No.
KR.....Corrector.
L..... Preparatory. Attention.
LCL (numerals)....On 4th piece close by (so much).
LOP (numerals)....On 4th piece open by (so much).
LT.....Left.
LL.....Left from the left.
LR.....Left from the right.
LE (numerals).....Less (so much).
MD.....Move down.
ML.....Move ° to your left.
MR.....Move to your right.
MU.....Move up.
MO (numerals).....Move (so much).
N.....Annul, cancel.
O.....What is the (R. N., etc.)? Interrogatory. (Ardois and semaphore only.)
• • — — • • .....What is the (R. N., etc.)? Interrogatory. (All methods but ardois and semaphore.)
P.....Affirmative. Yes.
PS.....Percussion. Shrapnel.
QRQ.....Send faster
QRS.....Send slower.
QRT.....Cease sending.
R.....Acknowledgment. Received.
RS.....Regimental station.
RL.....Right from the left.
RR.....Right from the right.
RN.....Range.
RT.....Right.
S.....Subtract.
SCL (numerals)....On 2d piece close by (so much).
SOP (numerals)....On 2d piece open by (so much).
SH.....Shell.
SI.....Site.
SSS.....Support needed.
T.....Target.
TCL (numerals)....On 3d piece close by (so much).
TOP (numerals)....On 3d piece open by (so much).
U.....Up.
Y (letter).....Such battery station.

## CHAPTER VIII.

## FIRST AID RULES.

The bandages and dressings contained in the first-aid packet have been so treated as to destroy any germs thereon. Therefore, when dressing a wound, be careful not to touch or handle that part of the dressing which is to be applied to the wound.

A sick or injured person should always be made to lie down on his back, if practicable, as this is the most comfortable position, and all muscles may be relaxed.

All tight articles of clothing and equipment should be loosened, so as not to interfere with breathing or the circulation of the blood. Belts, collars, and the trousers at the waist should be opened.

Fig. 1.

Don't let mere onlookers crowd about the patient. They prevent him from getting fresh air and also make him nervous and excited.

In case of injury the heart action is generally weak from shock, and the body, therefore, grows somewhat cold. So don't remove any more clothing than is necessary to expose the injury.

Cut or rip the clothing, but don't pull it. Try to disturb the patient as little as possible.

Don't touch a wound with your fingers or a handkerchief, or with anything else but the first-aid dressing. Don't wash the wound with water, as you may infect it.

Don't administer stimulants (whisky, brandy, wine, etc.) unless ordered to do so by a doctor. While in a few cases stimulants are of benefit, in a great many cases they do positive harm, especially where there has been any bleeding.

FIG. 2.

The heart may be considered as a pump and the arteries as a rubber hose, which carry the blood from the heart to every part of the body. The veins are the hose which carry the blood back to the heart. Every wound bleeds some, but, unless a large artery or a large vein is cut, the bleeding will stop after a

short while if the patient is kept quiet and the first-aid dressing is bound over the wound so as to make pressure on it.

When a large artery is cut the blood gushes out in spurts every time the heart beats. In this case it is necessary to stop the flow of blood by pressing upon the hose somewhere between the heart and the leak.

If the leak is in the arm or hand, apply pressure as in figure 1.

If the leak is in the leg, apply pressure as in figure 2.

If the leak is in the shoulder or armpit, apply pressure as in figure 3.

The reason for this is that at the places indicated the arteries may be pressed against a bone more easily than at any other places.

FIG. 3.

Another way of applying pressure (by means of a tourniquet) is shown in figure 4. Place a pad of tightly rolled cloth or paper, or any suitable object, over the artery. Tie a bandage loosely about the limb and then insert your bayonet, or a stick, and twist up the bandage until the pressure of the pad on the artery stops the leak. Twist the bandage slowly and stop as soon as the blood ceases to flow, in order not to bruise the flesh or muscles unnecessarily.

A tourniquet may cause pain and swelling of the limb, and if left on too long may cause the limb to die. Therefore, about every half hour or so, loosen the bandage very carefully, but if the bleeding continues pressure must be applied again. In this case apply the pressure with the thumb for five or ten minutes, as this cuts off only the main artery and leaves some of the small arteries and the veins free to restore some of the circu- [illegible] a tourniquet is painful, it is too tight and should [illegible]

If the leg or arm is held upright, this also helps to reduce the bleeding in these parts, because the heart then has to pump the blood uphill.

A broken bone is called a fracture. The great danger in the case of a fracture is that the sharp, jagged edges of the bones

FIG. 4—Improvised tourniquet.

may stick through the flesh and skin, or tear and bruise the arteries, veins, and muscles. If the skin is not broken, a fracture is not so serious, as no germs can get in. **Therefore never move a person with a broken bone until the fracture has been so fixed that the broken ends of the bone can not move.**

If the leg or arm is broken, straighten the limb gently and if necessary pull upon the end firmly to get the bones in place. Then bind the limb firmly to a splint to hold it in place. A splint may be made of any straight, stiff material—a shingle or piece of board, a bayonet, a rifle, a straight branch of a tree, etc. Whatever material you use must be well padded on the side next to the limb. Be careful never to place the bandages over the fracture, but always above and below. (Figs. 5, 6, 7, 8.)

FIG. 5.

FIG. 6.

Many surgeons think that the method of binding a broken leg to the well one, and of binding the arm to the body, is the best plan in the field as being the quickest and one that serves the immediate purpose.

With wounds about the body the chest and abdomen you must not meddle except to protect them when possible without much handling with the materials of the packet.

### FAINTING, SHOCK, HEAT EXHAUSTION.

The symptoms of fainting, shock, and heat exhaustion are very similar. The face is pale, the skin cool and moist, the

is not exhausting to the operator, thus permitting him, if required, to continue it for one or two hours. When it is known that a person has been under water for but a few minutes continue the artificial respiration for at least one and a half to two hours before considering the case hopeless. Once the patient has begun to breathe watch carefully to see that he does not stop again. Should the breathing be very faint, or should he stop breathing, assist him again with artificial respiration. After he starts breathing do not lift him nor permit him to stand until the breathing has become full and regular.

As soon as the patient is removed from the water, turn him face to the ground, clasp your hands under his waist, and raise the body so any water may drain out of the air passages while the head remains low. (Figure 9.)

### SCHAEFER METHOD.

The patient is laid on his stomach, arms extended from his body beyond his head, face turned to one side so that the mouth and nose do not touch the ground. This position causes the tongue to fall forward of its own weight and so prevents its falling back into the air passages. Turning the head to one side prevents the face coming into contact with mud or water during the operation. This position also facilitates the removal from the mouth of foreign bodies, such as tobacco, chewing gum, false teeth, etc., and favors the expulsion of mucus, blood, vomitus, serum, or any liquid that may be in the air passages.

The operator kneels, straddles one or both of the patient's thighs, and faces his head. Locating the lowest rib, the operator, with his thumbs nearly parallel to his fingers, places his hands so that the little finger curls over the twelfth rib. If the hands are on the pelvic bones the object of the work is defeated; hence the bones of the pelvis are first located in order to avoid them. The hands must be free from the pelvis and resting on the lowest rib. By operating on the bare back it is easier to locate the lower ribs and avoid the pelvis. The nearer the ends of the ribs the hands are placed without sliding off the better. The hands are thus removed from the spine, the fingers being nearly out of sight.

The fingers help some, but the chief pressure is exerted by the heels (thenar and hypothenar eminences) of the hands, with the weight coming straight from the shoulders. It is a waste of energy to bend the arms at the elbows and shove in from the sides, because the muscles of the back are stronger than the muscles of the arms.

The operator's arms are held straight, and his weight is brought from his shoulders by bringing his body and shoulders forward. This weight is gradually increased until at the end of the three seconds of vertical pressure upon the lower ribs of the patient the force is felt to be heavy enough to compress the parts; then the weight is suddenly removed. If there is danger of not returning the hands to the right position again, they can remain lightly in place; but it is usually better to remove the hands entirely. If the operator is light and the patient an overweight adult, he can utilize over 80 per cent of his weight by raising his knees from the ground and supporting himself entirely on his toes and the heels of his hands, the latter properly placed on the ends of the floating ribs of the patient. In this manner he can work as effectively as a heavy man.

A light feather or a piece of absorbent cotton drawn out thin and held near the nose by some one will indicate by its movements whether or not there is a current of air going and coming with each forced expiration and spontaneous inspiration.

The natural rate of breating is 12 to 15 times per minute. The rate of operation should not exceed this. The lungs must be thoroughly emptied by three seconds of pressure, then refilling takes care of itself. Pressure and release of pressure—one complete respiration—occupies about five seconds. If the operator is alone, he can be guided in each act by his own deep, regular respiration or by counting or by his watch lying by his side. If comrades are present, he can be advised by them.

The duration of the efforts as artificial respiration should ordinarily exceed an hour; indefinitely longer if there are any evidences of returning animation, by way of breathing, speaking, or movements. There are liable to be evidences of life within 25 minutes in patients who will recover from electric shock, but where there is doubt the patient should be given the benefit of the doubt. In drowning, especially, recoveries are on record

FIG. 9.—Schaefer method of artificial respiration. Inspiration.

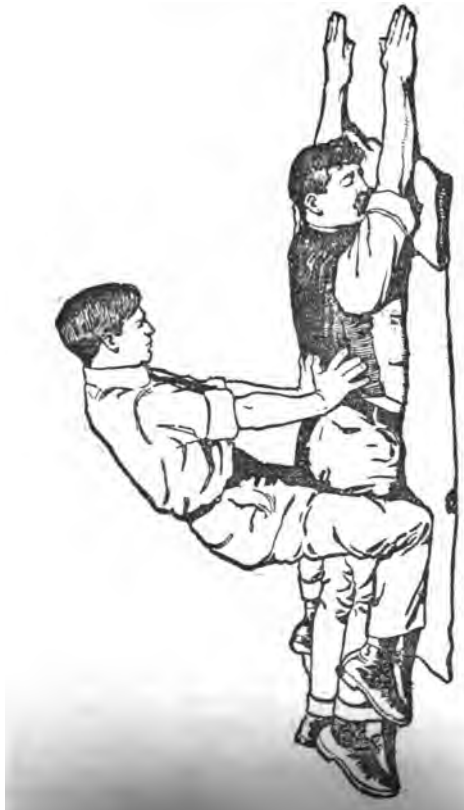


FIG. 10.—Schaefer method of artificial respiration. Expiration.

after two hours or more of unconsciousness; hence, the Schaefer method, being easy of operation, is more likely to be persisted in.

Aromatic spirits of ammonia may be poured on a handkerchief and held continuously within 3 inches of the face and nose. If other ammonia preparations are used, they should be diluted or held farther away. Try it on your own nose first.

When the operator is a heavy man it is necessary to caution him not to bring force too violently upon the ribs, as one of them might be broken.

Do not attempt to give liquids of any kind to the patient while unconscious. Apply warm blankets and hot-water bottles as soon as they can be obtained.

## CHAPTER IX.

# LAWS AND REGULATIONS.

### Section 1. General Provisions.

The Army of the United States is governed by certain laws called "The Articles of War" and certain regulations called "Army Regulations."

The following list includes the offenses most often committed by soldiers, generally through ignorance or carelessness rather than viciousness. Violations of any rule or regulation should be carefully guarded against, since they not only subject the offender to punishment, but also bring discredit on his comrades, his organization, and on the military profession:

1. Selling, pawning, or, through neglect, losing or spoiling any Government property, such as uniforms, blankets, equipment, ammunition, etc.
2. Disobedience of the orders of any officer or noncommissioned officer.
3. Disrespect to an officer or noncommissioned officer.
4. Absence from camp without leave.
5. Absence from any drill, formation, or other duty without authority.
6. Drunkenness on duty or off duty, whether in camp or when absent either with or without leave.
7. Bringing liquor into camp.
8. Noisy or disorderly conduct in camp or when absent either with or without leave.
9. Entering on private property, generally for the purpose of stealing fruit, etc.

10. Negligence or carelessness at drill or on other duty, particularly while on guard or as a sentinel over prisoners.
11. Wearing an unauthorized uniform or wearing the uniform in an improper manner.
12. Urinating in or around camp.
13. Failing to salute properly.
14. Disrespect or affront to a sentinel.
15. Abuse or neglect of his horse.

"The basic principles of the combat tactics of the different arms are set forth in the Drill Regulations of those arms for units as high as brigades." (*Preface, Field Service Regulations.*)

"The Drill Regulations are furnished as a guide. They provide the principles for training and for increasing the probability of success in battle. In the interpretation of the regulations the spirit must be sought. Quibbling over the minutiæ of form is indicative of failure to grasp the spirit." (*Paragraph 4, Infantry Drill Regulations.*)

Field Service Regulations govern all arms of the Army of the United States.

### Section 2. The Army of the United States.

The Army of the United States shall consist of the Regular Army, the Volunteer Army, the Officers' Reserve Corps, the Enlisted Reserve Corps, the National Guard while in the service of the United States, and such other land forces as are now or may hereafter be authorized by law. (Sec. 1, act of June 3, 1916.)

### Section 3. Rank and Precedence of Officers and Noncommissioned Officers.

The following are the grades of rank of officers and noncommissioned officers:

1. Lieutenant general.
2. Major general.
3. Brigadier general.
4. Colonel.
5. Lieutenant colonel.

6. Major.
7. Captain.
8. First lieutenant.
9. Second lieutenant.
10. Aviator, Signal Corps.
11. Cadet.
12. (*a*) Sergeant major, regimental; sergeant major, senior grade, Coast Artillery Corps; (*b*) quartermaster sergeant, senior grade, Quartermaster Corps; master hospital sergeant, Medical Department; master engineer, senior grade, Corps of Engineers; master electrician, Coast Artillery Corps; master signal electrician; band leader; (*c*) hospital sergeant, Medical Department; master engineer, junior grade, Corps of Engineers; engineer, Coast Artillery Corps.
13. Ordnance sergeant; quartermaster sergeant, Quartermaster Corps; supply sergeant, regimental.
14. Sergeant major, squadron and battalion; sergeant major, junior grade, Coast Artillery Corps; supply sergeant, battalion, Corps of Engineers.
15. (*a*) First sergeant; (*b*) sergeant, first class, Medical Department; sergeant, first class, Quartermaster Corps; sergeant, first class, Corps of Engineers; sergeant, first class, Signal Corps; electrician sergeant, first class, Coast Artillery Corps; electrician sergeant, Artillery Detachment, United States Military Academy; assistant engineer, Coast Artillery Corps; (*c*) master gunner, Coast Artillery Corps; master gunner, Artillery Detachment, United States Military Academy; band sergeant and assistant leader, United States Military Academy band; assistant band leader; sergeant bugler; electrician sergeant, second class, Coast Artillery Corps; electrician sergeant, second class, Artillery Detachment, United States Military Academy; radio sergeant.
16. Color sergeant.
17. Sergeant; supply sergeant, company; mess sergeant; stable sergeant; fireman, Coast Artillery Corps.
18. Corporal.

In each grade and subgrade date of commission, appointment, or warrant determines the order of precedence. (Paragraph 9, Army Regulations,

## Section 4. Insignia of Officers and Noncommissioned Officers.

The insignia of rank appearing on the shoulder straps, shoulder loops, or collar of shirt (when shirt is worn without coat) of officers are as follows:

General: Coat of arms and two stars.
Lieutenant general: One large star and two smaller ones.
Major general: Two silver stars.
Brigadier general: One silver star.
Colonel: One silver spread eagle.
Lieutenant colonel: One silver leaf.
Major: One gold leaf:
Captain: Two silver bars.
First lieutenant: One silver bar.

The grade of noncommissioned officers is indicated by chevrons worn on the sleeve.

## Section 5. Extracts from the Articles of War.

(Relating to enlisted men.)

### CERTAIN ARTICLES TO BE READ AND EXPLAINED.

ART. 110. Articles 1, 2, and 29, 54 to 96, inclusive, and 104 to 109, inclusive, shall be read and explained to every soldier at the time of his enlistment or muster in, or within six days thereafter, and shall be read and explained once every six months to the soldiers of every garrison, regiment, or company in the service of the United States.

### DEFINITIONS.

ARTICLE 1. The following words when used in these articles shall be construed in the sense indicated in this article, unless the context shows that a different sense is intended, namely:

(*a*) The word "officer" shall be construed to refer to a commissioned officer;

(*b*) The word "soldier" shall be construed as including a noncommissioned officer, a private, or any other enlisted man;

(*c*) The word "company" shall be understood as including a troop or battery; and

(*d*) The word "battalion" shall be understood as including a squadron.

PERSONS SUBJECT TO MILITARY LAW.

ART. 2. The following persons are subject to these articles and shall be understood as included in the term "any person subject to military law" or "persons subject to military law" whenever used in these articles: *Provided*, That nothing contained in this act, except as specifically provided in article 2, subparagraph (*c*), shall be construed to apply to any person under the United States naval jurisdiction, unless otherwise specifically provided by law:

(*a*) All officers and soldiers belonging to the Regular Army of the United States; all volunteers, from the dates of their muster or acceptance into the military service of the United States; and all other persons lawfully called, drafted, or ordered into or to duty or for training in the said service, from the dates they are required by the terms of the call, draft, or order to obey the same.

(*b*) Cadets.

(*c*) Officers and soldiers of the Marine Corps when detached for service with the armies of the United States by order of the President: *Provided*, That an officer or soldier of the Marine Corps when so detached may be tried by military court-martial for an offense committed against the laws for the government of the naval service prior to his detachment, and for an offense committed against these articles he may be tried by a naval court-martial after such detachment ceases.

(*d*) All retainers to the camp and all persons accompanying or serving with the armies of the United States without the territorial jurisdiction of the United States, and in time of war all such retainers and persons accompanying or serving with the armies of the United States in the field, both within and without the territorial jurisdiction of the United States, though not otherwise subject to these articles.

(*e*) All persons under sentence adjudged by courts-martial.

(*f*) All persons admitted into the Regular Army Soldiers' Home at Washington, D. C.

ENLISTMENT WITHOUT DISCHARGE.

ART. 29. Any soldier who, without having first received a regular discharge, again enlists in the Army, or in the militia when in the service of the United States, or in the Navy or Marine Corps of the United States, or in any foreign army, shall be deemed to have deserted the service of the United States; and, where enlistment is in one of the forces of the United States mentioned above, to have fraudulently enlisted therein.

FRAUDULENT ENLISTMENT.

ART. 54. Any person who shall procure himself to be enlisted in the military service of the United States by means of willful misrepresentation or concealment as to his qualifications for enlistment, and shall receive pay or allowances under such enlistment, shall be punished as a court-martial may direct.

OFFICER MAKING UNLAWFUL ENLISTMENT.

ART. 55. Any officer who knowingly enlists or musters into the military service any person whose enlistment or muster in is prohibited by law, regulations, or orders shall be dismissed from the service or suffer such other punishment as a court-martial may direct.

MUSTER ROLLS—FALSE MUSTER.

ART. 56. At every muster of a regiment, troop, battery, or company the commanding officer thereof shall give to the mustering officer certificates, signed by himself, stating how long absent officers have been absent and the reasons of their absence. And the commanding officer of every troop, battery, or company shall give like certificates, stating how long absent noncommissioned officers and private soldiers have been absent and the reasons of their absence. Such reasons and time of absence shall be inserted in the muster rolls opposite the names of the

respective absent officers and soldiers, and the certificates, together with the muster rolls, shall be transmitted by the mustering officer to the Department of War as speedily as the distance of the place and muster will admit. Any officer who knowingly makes a false muster of man or animal, or who signs or directs or allows the signing of any muster roll knowing the same to contain false muster or false statement as to the absence or pay of an officer or soldier, or who wrongfully takes money or other consideration on mustering in a regiment, company, or other organization, or on signing muster rolls, or who knowingly musters as an officer or soldier a person who is not such officer or soldier, shall be dismissed from the service and suffer such other punishment as a court-martial may direct.

### FALSE RETURNS—OMISSION TO RENDER RETURNS.

ART. 57. Every officer commanding a regiment, an independent troop, battery, or company, or a garrison shall, in the beginning of every month, transmit, through the proper channels, to the War Department an exact return of the same, specifying the names of the officers then absent from their posts, with the reasons for and the time of their absence. Every officer whose duty it is to render to the War Department or other superior authority a return of the state of the troops under his command, or of the arms, ammunition, clothing, funds, or other property thereunto belonging, who knowingly makes a false return thereof shall be dismissed from the service and suffer such other punishment as a court-martial may direct. And any officer who, through neglect or design, omits to render such return shall be punished as a court-martial may direct.

### DESERTION.

ART. 58. Any person subject to military law who deserts or attempts to desert the service of the United States shall, if the offense be committed in time of war, suffer death or such other punishment as a court-martial may direct, and, if the offense be committed at any other time, any punishment, excepting death, that a court-martial may direct.

ADVISING OR AIDING ANOTHER TO DESERT.

ART. 59. Any person subject to military law who advises or persuades or knowingly assists another to desert the service of the United States shall, if the offense be committed in time of war, suffer death, or such other punishment as a court-martial may direct, and if the offense be committed at any other time any punishment, excepting death, that a court-martial may direct.

ENTERTAINING A DESERTER.

ART. 60. Any officer who, after having discovered that a soldier in his command is a deserter from the military or naval service or from the Marine Corps, retains such deserter in his command without informing superior authority or the commander of the organization to which the deserter belongs, shall be punished as a court-martial may direct.

ABSENCE WITHOUT LEAVE.

ART. 61. Any person subject to military law who fails to repair at the fixed time to the properly appointed place of duty, or goes from the same without proper leave, or absents himself from his command, guard, quarters, station or camp without proper leave, shall be punished as a court-martial may direct.

DISRESPECT TOWARD THE PRESIDENT, VICE PRESIDENT, CONGRESS, SECRETARY OF WAR, GOVERNORS, LEGISLATURES.

ART. 62. Any officer who uses contemptuous or disrespectful words against the President, Vice President, the Congress of the United States, the Secretary of War, or the governor or legislature of any State, Territory, or other possession of the United States in which he is quartered shall be dismissed from the service or suffer such other punishment as a court-martial may direct. Any other person subject to military law who so offends shall be punished as a court-martial may direct.

DISRESPECT TOWARD SUPERIOR OFFICERS.

ART. 63. Any person subject to military law who behaves himself with disrespect toward his superior officer shall be punished as a court-martial may direct.

ASSAULTING OR WILLFULLY DISOBEYING SUPERIOR OFFICER.

ART. 64. Any person subject to military law who, on any pretense whatsoever, strikes his superior officer or draws or lifts up any weapon or offers any violence against him, being in the execution of his office, or willfully disobeys any lawful command of his superior officer, shall suffer death or such other punishment as a court-martial may direct.

INSUBORDINATE CONDUCT TOWARD NONCOMMISSIONED OFFICER.

ART. 65. Any soldier who strikes or assaults, or who attempts or threatens to strike or assault, or willfully disobeys the lawful order of a noncommissioned officer while in the execution of his office, or uses threatening or insulting language, or behaves in an insubordinate or disrespectful manner toward a noncommissioned officer while in the execution of his office, shall be punished as a court-martial may direct.

MUTINY OR SEDITION.

ART. 66. Any person subject to military law who attempts to create or who begins, excites, causes, or joins in any mutiny or sedition in any company, party, post, camp, detachment, guard, or other command shall suffer death or such other punishment as a court-martial may direct.

FAILURE TO SUPPRESS MUTINY OR SEDITION.

ART. 67. Any officer or soldier who, being present at any mutiny or sedition, does not use [illegible] to suppress the same, or knowing or [illegible]

mutiny or sedition is to take place, does not without delay give information thereof to his commanding officer shall suffer death or such other punishment as a court-martial may direct.

QARRELS, FRAYS, DISORDERS.

ART. 68. All officers and noncommissioned officers have power to part and quell all quarrels, frays, and disorders among persons subject to military law and to order officers who take part in the same into arrest, and other persons subject to military law who take part in the same into arrest or confinement, as circumstances may require, until their proper superior officer is acquainted therewith. And whosoever, being so ordered, refuses to obey such officer or noncommissioned officer or draws a weapon upon or otherwise threatens or does violence to him shall be punished as a court-martial may direct.

ARREST OR CONFINEMENT OF ACCUSED PERSONS.

ART. 69. An officer charged with crime or with a serious offense under these articles shall be placed in arrest by the commanding officer, and in exceptional cases an officer so charged may be placed in confinement by the same authority. A soldier charged with crime or with a serious offense under these articles shall be placed in confinement, and when charged with a minor offense he may be placed in arrest. Any other person subject to military law charged with crime or with a serious offense under these articles shall be placed in confinement or in arrest, as circumstances may require; and when charged with a minor offense such person may be placed in arrest. Any person placed in arrest under the provisions of this article shall thereby be restricted to his barracks, quarters, or tent, unless such limits shall be enlarged by proper authority. Any officer who breaks his arrest or who escapes from confinement before he is set at liberty by proper authority shall be dismissed from the service or suffer such other punishment as a court-martial may direct; and any other person subject to military law who escapes from confinement or who breaks his arrest before he is set at liberty by proper authority shall be punished as a court-martial may direct.

INVESTIGATION OF AND ACTION UPON CHARGES.

ART. 70. No person put in arrest shall be continued in confinement more than eight days, or until such time as a court-martial can be assembled. When any person is put in arrest for the purpose of trial, except at remote military posts or stations, the officer by whose order he is arrested shall see that a copy of the charges on which he is to be tried is served upon him within eight days after his arrest, and that he is brought to trial within 10 days thereafter, unless the necessities of the service prevent such trial; and then he shall be brought to trial within 30 days after the expiration of said 10 days. If a copy of the charges be not served, or the arrested person be not brought to trial, as herein required, the arrest shall cease. But persons released from arrest, under the provisions of this article, may be tried, whenever the exigencies of the service shall permit, within 12 months after such release from arrest: *Provided*, That in time of peace no person shall, against his objection, be brought to trial before a general court-martial within a period of five days subsequent to the service of charges upon him.

REFUSAL TO RECEIVE AND KEEP PRISONERS.

ART. 71. No provost marshal or commander of a guard shall refuse to receive or keep any prisoner committed to his charge by an officer belonging to the forces of the United States, provided the officer committing shall, at the time, deliver an account in writing, signed by himself, of the crime or offense charged against the prisoner. Any officer or soldier so refusing shall be punished as a court-martial may direct.

REPORT OF PRISONERS RECEIVED.

ART. 72. Every commander of a guard to whose charge a prisoner is committed shall, within 24 hours after such confinement, or as soon as he is relieved from his guard, report in writing to the commanding officer the name of such prisoner, the offense charged against him, and the name of the officer committing him; and if he fails to make such report he shall be punished as a court-martial may direct.

RELEASING PRISONER WITHOUT PROPER AUTHORITY.

ART. 73. Any person subject to military law who, without proper authority, releases any prisoner duly committed to his charge, or who, through neglect or design, suffers any prisoner so committed to escape, shall be punished as a court-martial may direct.

DELIVERY OF OFFENDERS TO CIVIL AUTHORITIES.

ART. 74. When any person subject to military law, except one who is held by the military authorities to answer, or who is awaiting trial or result of trial, or who is undergoing sentence for a crime or offense punishable under these articles, is accused of a crime or offense committed within the geographical limits of the States of the Union and the District of Columbia, and punishable by the laws of the land, the commanding officer is required, except in time of war, upon application duly made, to use his utmost endeavor to deliver over such accused person to the civil authorities, or to aid the officers of justice in apprehending and securing him, in order that he may be brought to trial. Any commanding officer who upon such application refuses or willfully neglects, except in time of war, to deliver over such accused person to the civil authorities or to aid the officers of justice in apprehending and securing him shall be dismissed from the service or suffer such other punishment as a court-martial may direct.

When under the provisions of this article delivery is made to the civil authorities of an offender undergoing sentence of a court-martial, such delivery, if followed by conviction, shall be held to interrupt the execution of the sentence of the court-martial, and the offender shall be returned to military custody, after having answered to the civil authorities for his offense, for the completion of the said court-martial sentence.

MISBEHAVIOR BEFORE THE ENEMY.

ART. 75. Any officer or soldier who misbehaves himself before the enemy; runs away, or shamefully abandons or delivers up

any fort, post, camp, guard, or other command which it is his duty to defend, or speaks words inducing others to do the like, or casts away his arms or ammunition, or quits his post or colors to plunder or pillage, or by any means whatsoever occasions false alarms in camp, garrison, or quarters, shall suffer death or such other punishment as a court-martial may direct.

SUBORDINATES COMPELLING COMMANDER TO SURRENDER.

ART. 76. If any commander of any garrison, fort, post, camp, guard, or other command is compelled by the officers or soldiers under his command to give it up to the enemy or to abandon it, the officers or soldiers so offending shall suffer death or such other punishment as a court-martial may direct.

IMPROPER USE OF COUNTERSIGN.

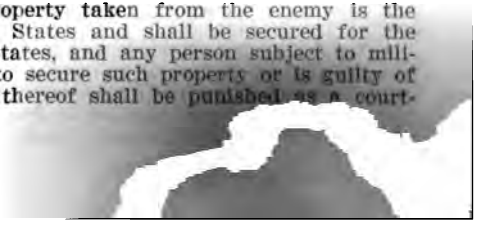
ART. 77. Any person subject to military law who makes known the parole or countersign to any person not entitled to receive it according to the rules and discipline of war, or gives a parole or countersign different from that which he received, shall, if the offense be committed in time of war, suffer death or such other punishment as a court-martial may direct.

FORCING A SAFEGUARD.

ART. 78. Any person subject to military law who, in time of war, forces a safeguard shall suffer death or such other punishment as a court-martial may direct.

CAPTURED PROPERTY TO BE SECURED FOR PUBLIC SERVICE.

ART. 79. All public property taken from the enemy is the property of the United States and shall be secured for the service of the United States, and any person subject to military law who neglects to secure such property or is guilty of wrongful appropriation thereof shall be punished as a court-martial may direct.



DEALING IN CAPTURED OR ABANDONED PROPERTY.

ART. 80. Any person subject to military law who buys, sells, trades, or in any way deals in or disposes of captured or abandoned property, whereby he shall receive or expect any profit, benefit, or advantage to himself or to any other person directly or indirectly connected with himself, or who fails whenever such property comes into his possession or custody or within his control to give notice thereof to the proper authority and to turn over such property to the proper authority without delay, shall, on conviction thereof, be punished by fine or imprisonment, or by such other punishment as a court-martial, military commission, or other military tribunal may adjudge, or by any or all of said penalties.

RELIEVING, CORRESPONDING WITH, OR AIDING THE ENEMY.

ART. 81. Whosoever relieves the enemy with arms, ammunition, supplies, money, or other thing, or knowingly harbors or protects or holds correspondence with or gives intelligence to the enemy, either directly or indirectly, shall suffer death, or such other punishment as a court-martial or military commission may direct.

SPIES.

ART. 82. Any person who in time of war shall be found lurking or acting as a spy in or about any of the fortifications, posts, quarters, or encampments of any of the armies of the United States, or elsewhere, shall be tried by a general court-martial or by a military commission, and shall, on conviction thereof, suffer death.

MILITARY PROPERTY—WILLFUL OR NEGLIGENT LOSS, DAMAGE, OR WRONGFUL DISPOSITION OF.

ART. 83. Any person subject to military law who willfully or through neglect suffers to be lost, spoiled, damaged, or wrongfully disposed of any military property belonging to the United States shall make good the loss or damage and suffer such punishment as a court-martial may direct.

WASTE OR UNLAWFUL DISPOSITION OF MILITARY PROPERTY ISSUED TO SOLDIERS.

ART. 84. Any soldier who sells or wrongfully disposes of or willfully or through neglect injures or loses any horse, arms, ammunition, accouterments, equipments, clothing, or other property issued for use in the military service shall be punished as a court-martial may direct.

DRUNK ON DUTY.

ART. 85. Any officer who is found drunk on duty shall, if the offense be committed in time of war, be dismissed from the service and suffer such other punishment as a court-martial may direct; and if the offense be committed in time of peace he shall be punished as a court-martial may direct. Any person subject to military law, except an officer, who is found drunk on duty shall be punished as a court-martial may direct.

MISBEHAVIOR OF SENTINEL.

ART. 86. Any sentinel who is found drunk or sleeping upon his post, or who leaves it before he is regularly relieved, shall, if the offense be committed in time of war, suffer death or such other punishment as a court-martial may direct; and if the offense be committed in time of peace he shall suffer any punishment, except death, that a court-martial may direct.

PERSONAL INTEREST IN SALE OF PROVISIONS.

ART. 87. Any officer commanding in any garrison, fort, barracks, camp, or other place where troops of the United States may be serving who, for his private advantage, lays any duty or imposition upon or is interested in the sale of any victuals or other necessaries of life brought into such garrison, fort, barracks, camp, or other place for the use of the troops, shall be dismissed from the service and suffer such other punishment as a court-martial may direct.

INTIMIDATION OF PERSONS BRINGING PROVISIONS.

ART. 88. Any person subject to military law who abuses, intimidates, does violence to, or wrongfully interferes with any person bringing provisions, supplies, or other necessaries to the camp, garrison, or quarters of the forces of the United States shall suffer such punishment as a court-martial may direct.

GOOD ORDER TO BE MAINTAINED AND WRONGS REDRESSED.

ART. 89. All persons subject to military law are to behave themselves orderly in quarters, garrison, camp, and on the march; and any person subject to military law who commits any waste or spoil, or willfully destroys any property whatsoever (unless by order of his commanding officer), or commits any kind of depredation or riot, shall be punished as a court-martial may direct. Any commanding officer who, upon complaint made to him, refuses or omits to see reparation made to the party injured, in so far as the offender's pay shall go toward such reparation, as provided for in article 105, shall be dismissed from the service or otherwise punished as a court-martial may direct.

PROVOKING SPEECHES OR GESTURES.

ART. 90. No person subject to military law shall use any reproachful or provoking speeches or gestures to another; and any person subject to military law who offends against the provisions of this article shall be punished as a court-martial may direct.

DUELING.

ART. 91. Any person subject to military law who fights or promotes or is concerned in or connives at fighting a duel, or who having knowledge of a challenge sent or about to be sent fails to report the fact promptly to the proper authority, shall, if an officer, be dismissed from the service or suffer such other punishment as a court-martial may direct; and if any other person subject to military law shall suffer such punishment as a court-martial may direct.

MURDER—RAPE.

ART. 92. Any person subject to military law who commits murder or rape shall suffer death or imprisonment for life, as a court-martial may direct; but no person shall be tried by court-martial for murder or rape committed within the geographical limits of the States of the Union and the District of Columbia in time of peace.

VARIOUS CRIMES.

ART. 93. Any person subject to military law who commits manslaughter, mayhem, arson, burglary, robbery, larceny, embezzlement, perjury, assault with intent to commit any felony, or assault with intent to do bodily harm, shall be punished as a court-martial may direct.

FRAUDS AGAINST THE GOVERNMENT.

ART. 94. Any person subject to military law who makes or causes to be made any claim against the United States or any officer thereof, knowing such claim to be false or fraudulent; or

Who presents or causes to be presented to any person in the civil or military service thereof, for approval or payment, any claim against the United States or any officer thereof, knowing such claim to be false or fraudulent; or

Who enters into any agreement or conspiracy to defraud the United States by obtaining, or aiding others to obtain, the allowance or payment of any false or fraudulent claim; or

Who, for the purpose of obtaining, or aiding others to obtain, the approval, allowance, or payment of any claim against the United States or against any officer thereof, makes or uses, or procures, or advises the making or use of, any writing or other paper, knowing the same to contain any false or fraudulent statements; or

Who, for the purpose of obtaining, or aiding others to obtain, the approval, allowance, or payment of any claim against the United States or any officer thereof, makes, or procures, or advises the making of, any oath to any fact or to any writing or other paper, knowing such oath to be false; or

Who, for the purpose of obtaining, or aiding others to obtain, the approval, allowance, or payment of any claim against the United States or any officer thereof, forges or counterfeits, or procures, or advises the forging or counterfeiting of any signature upon any writing or other paper, or uses, or procures, or advises the use of any such signature, knowing the same to be forged or counterfeited; or

Who, having charge, possession, custody, or control of any money or other property of the United States, furnished or intended for the military service thereof, knowingly delivers, or causes to be delivered, to any person having authority to receive the same, any amount thereof less than that for which he receives a certificate or receipt; or

Who, being authorized to make or deliver any paper certifying the receipt of any property of the United States furnished or intended for the military service thereof, makes or delivers to any person such writing, without having full knowledge of the truth of the statements therein contained and with intent to defraud the United States; or

Who steals, embezzles, knowingly and willfully misappropriates, applies to his own use or benefit, or wrongfully or knowingly sells or disposes of any ordnance, arms, equipments, ammunition, clothing, subsistence stores, money, or other property of the United States furnished or intended for the military service thereof; or

Who knowingly purchases or receives in pledge for any obligation or indebtedness from any soldier, officer, or other person who is a part of or employed in said forces or service, any ordnance, arms, equipment, ammunition, clothing, subsistence stores, or other property of the United States, such soldier, officer, or other person not having lawful right to sell or pledge the same;

Shall, on conviction thereof, be punished by fine or imprisonment, or by such other punishment as a court-martial may adjudge, or by any or all of said penalties. And if any person, being guilty of any of the offenses aforesaid while in the military service of the United States, receives his discharge or is dismissed from the service, he shall continue to be liable to be

arrested and held for trial and sentence by a court-martial in the same manner and to the same extent as if he had not received such discharge nor been dismissed.

CONDUCT UNBECOMING AN OFFICER AND GENTLEMAN.

ART. 95. Any officer or cadet who is convicted of conduct unbecoming an officer and a gentleman shall be dismissed from the service.

GENERAL ARTICLE.

ART. 96. Though not mentioned in these articles, all disorders and neglects to the prejudice of good order and military discipline, all conduct of a nature to bring discredit upon the military service, and all crimes or offenses not capital of which persons subject to military law may be guilty shall be taken cognizance of by a general or special or summary court-martial, according to the nature and degree of the offense, and punished at the discretion of such court.

DISCIPLINARY POWERS OF COMMANDING OFFICERS.

ART. 104. Under such regulations as the President may prescribe, and which he may from time to time revoke, alter, or add to, the commanding officer of any detachment, company, or higher command may, for minor offenses not denied by the accused, impose disciplinary punishments upon persons of his command without the intervention of a court-martial, unless the accused demands trial by court-martial.

The disciplinary punishments authorized by this article may include admonition, reprimand, withholding of privileges, extra fatigue, and restriction to certain specified limits, but shall not include forfeiture of pay or confinement under guard. A person punished under authority of this article who deems his punishment unjust or disproportionate to the offense may, through the proper channel, appeal to the next superior authority, but may in the meantime be required to undergo the punishment adjudged. The commanding officer who imposes

punishment, his successor in command, and superior authority shall have power to mitigate or remit any unexecuted portion of the punishment. The imposition and enforcement of disciplinary punishment under authority of this article for any act or omission shall not be a bar to trial by court-martial for a crime or offense growing out of the same act or omission; but the fact that a disciplinary punishment has been enforced may be shown by the accused upon trial, and when so shown shall be considered in determining the measure of punishment to be adjudged in the event of a finding of guilty.

REDRESS OF INJURIES TO PERSON OR PROPERTY.

ART. 105. Whenever complaint is made to any commanding officer that damage has been done to the property of any person or that his property has been wrongfully taken by persons subject to military law, such complaint shall be investigated by a board consisting of any number of officers from one to three, which board shall be convened by the commanding officer and shall have, for the purpose of such investigation, power to summon witnesses and examine them upon oath or affirmation, to receive depositions or other documentary evidence, and to assess the damages sustained against the responsible parties. The assessment of damages made by such board shall be subject to the approval of the commanding officer, and in the amount approved by him shall be stopped against the pay of the offenders. And the order of such commanding officer directing stoppages herein authorized shall be conclusive on any disbursing officer for the payment by him to the injured parties of the stoppages so ordered.

Where the offenders can not be ascertained but the organization or detachment to which they belong is known, stoppages to the amount of damages inflicted may be made and assessed in such proportion as may be deemed just upon the individual members thereof who are shown to have been present with such organization or detachment at the time the damages complained of were inflicted, as determined by the approved findings of the board.

ARREST OF DESERTERS BY CIVIL OFFICIALS.

ART. 106. It shall be lawful for any civil officer having authority under the laws of the United States, or of any State, Territory, District, or possession of the United States, to arrest offenders, summarily to arrest a deserter from the militay service of the United States and deliver him into the custody of the military authorities of the United States.

SOLDIERS TO MAKE GOOD TIME LOST.

ART. 107. Every soldier who in an existing or subsequent enlistment deserts the service of the United States or without proper authority absents himself from his organization, station, or duty for more than one day, or who is confined for more than one day under sentence, or while awaiting trial and disposition of his case, if the trial results in conviction, or through the intemperate use of drugs or alcoholic liquor, or through disease or injury the result of his own misconduct, renders himself unable for more than one day to perform duty, shall be liable to serve, after his return to a full-duty status, for such period as shall, with the time he may have served prior to such desertion, unauthorized absence, confinement, or inability to perform duty, amount to the full term of that part of his enlistment period which he is required to serve with his organization before being furloughed to the Army Reserve.

SOLDIERS—SEPARATION FROM THE SERVICE.

ART. 108. No enlisted man, lawfully inducted into the military service of the United States, shall be discharged from said service without a certificate of discharge, signed by a field officer of the regiment or other organization to which the enlisted man belongs or by the commanding officer when no such field officer is present; and no enlisted man shall be discharged from said service before his term of service has expired, except by order of the President, the Secretary of War, the commanding officer of a department, or by sentence of a general court-martial.

### OATH OF ENLISTMENT.

ART. 109. At the time of his enlistment every soldier shall take the following oath or affirmation: "I, _____, do solemnly swear (or affirm) that I will bear true faith and allegiance to the United States of America; that I will serve them honestly and faithfully against all their enemies whomsoever; and that I will obey the orders of the President of the United States and the orders of the officers appointed over me, according to the Rules and Articles of War." This oath or affirmation may be taken before any officer.

## CHAPTER X.

# ENGLISH-FRENCH VOCABULARY.

### COMMON WORDS.

| | |
|---|---|
| Afternoon (this) | Cet après-midi. |
| Army (an) | Une armée. |
| Bandage | Un bandage. |
| Bath | Un bain. |
| Bayonet | Une baïonnette. |
| Bed | Un lit. |
| Blanket | Une couverture. |
| Boy | Un garçon. |
| Bullet | Une balle. |
| | Un pruneau (soldier slang). |
| Camp | Un camp. |
| | Un campement. |
| Cartridge | Une cartouche. |
| Child | Un enfant. |
| | Une enfant. |
| Cook | Un cuisinier. |
| | Un cuistot (slang). |
| | Une cuisinière (fem.). |
| Dance | Un bal. |
| | Une danse (one dance). |
| Dark | Obscur. |
| Day | Un jour. |
| Dead | Mort. |
| Deserter | Un déserteur. |
| Door | Une porte. |
| Farm | Une ferme. |
| Firearms | Des armes à feu. |

| | |
|---|---|
| Field gun | Une pièce de campagne. |
| Flag | Un drapeau. |
| | Un étendard (standard). |
| Forest | Une forêt. |
| | Un bois (woods). |
| | Un boqueteau (clump of trees). |
| Friend | Un ami. |
| | Une amie. |
| Girl | Une jeune fille. |
| Guide | Un guide. |
| Gun | Un fusil. |
| Halt! | Halte! |
| Hand | Une main. |
| Hat | Un chapeau. |
| | Un képi (cap). |
| | Un casque (helmet). |
| | Un feutre (campaign hat). |
| Head | La tête. |
| Headquarters | Le quartier-général. |
| Horse | Un cheval. |
| Interpreter | Un interprète. |
| Knife | Un couteau. |
| Lake | Un lac. |
| Man | Un homme. |
| Meat | De la viande. |
| Name | Un nom. |
| Night | La nuit. |
| Noon | Midi. |
| Machine gun | Une mitrailleuse. |
| Mess call | La soupe. |
| Password | Le mot de passe. |
| Pay | Le prêt (enlisted men). |
| | La solde (officers). |
| Prisoner | Un prisonnier. |
| Recruit | Une recrue. |
| | Un bleu (slang). |
| | Un bleuet (slang). |
| | Un blanc-bec (slang). |
| Restaurant | Un restaurant. |
| | Un café. |

| | |
|---|---|
| Road | Un chemin. |
| | Une route. |
| Retreat | La retraite. |
| Reveille | Le réveil. |
| | La diane. |
| Saber | Un sabre. |
| Saddle | Une selle. |
| Shoe | Des chaussures (shoes in general). |
| | Des souliers (low shoes). |
| | Des bottines (high shoes). |
| | Des brodequins (marching shoes). |
| Shotgun | Un fusil de chasse. |
| Sick | Malade. |
| Soup | Une soupe. |
| | Un potage. |
| Spy | Un espion. |
| Supper | Le souper. |
| Sword | Une épée. |
| Tent | Une tente. |
| Shelter tent | Une tente-abri. |

NUMERALS.

| | |
|---|---|
| One | Un, une. |
| Two | Deux. |
| Three | Trois. |
| Four | Quatre. |
| Five | Cinq (pronounce *sank*). |
| Six | Six (pronounce *cease*). |
| Seven | Sept (pronounce *set*). |
| Eight | Huit (pronounce *weet*). |
| Nine | Neuf. |
| Ten | Dix (pronounce *deess*). |
| Eleven | Onze. |
| Twelve | Douze. |
| Thirteen | Treize. |
| Fourteen | Quatorze. |
| Fifteen | Quinze. |
| Sixteen | Seize. |
| Seventeen | Dix-sept. |

| | |
|---|---|
| Eighteen | Dix-huit. |
| Nineteen | Dix-neuf. |
| Twenty | Vingt (pronounce *vant*). |
| Twenty-one | Vingt-et-un. |
| Thirty | Trente. |
| Thirty-one | Trente-et-un. |
| Thirty-two | Trente-deux. |
| Forty | Quarante. |
| Fifty | Cinquante. |
| Sixty | Soixante. |
| Seventy | Soixante-dix. |
| Seventy-one | Soixante-et-onze. |
| Seventy-two | Soixante-douze. |
| Eighty | Quatre-vingts. |
| Eighty-one | Quatre-vingt-un. |
| Ninety | Quatre-vingt-dix. |
| Ninety-one | Quatre-vingt-onze. |
| One hundred | Cent. |
| One hundred and one | Cent un. |
| Two hundred | Deux cents. |
| Two hundred and one | Deux cent un. |
| One thousand | Mille. |
| Two thousand | Deux mille. |
| One thousand one hundred | Mille cent; onze cents. |
| Thousands of soldiers | Des milliers de soldats. |
| A million | Un million. |
| Two million men | Deux millions d'hommes. |
| A score | Une vingtaine. |
| About forty men | Une quarantaine d'hommes. |
| Hundreds of men | Des centaines d'hommes. |

CURRENCY, MEASURES, AND WEIGHTS.

| | |
|---|---|
| 1 cent | Un sou; cinq centimes. |
| 10 cents | Dix sous; cinquante centimes. |
| 20 cents (about) | Un franc. |
| 1 dollar | Cinq francs. |

(The French have gold pieces of 10 francs and 20 francs; bank notes of 50 francs, 100 francs, and higher. The gold pieces are probably bank notes now.)

1 meter (1.0936 yards).....Un mètre.
1 kilometer (0.62138 mile).....Un kilomètre.

NOTE.—For all ordinary purposes, the "kilomètre"=$\frac{5}{8}$ of a mile; the "centimètre"=$\frac{4}{10}$ of an inch.

1 league (2.48552 miles).....Une lieue.
1 hectare (2.4711 acres).....Un hectare.
1 gram (15.43239 grains troy)....Un gramme.
1 kilogram (2.204621 pounds avoirdupois).....Un kilogramme.
220.46 pounds avoirdupois.....Un quintal; 100 kilos.
2,204.6 pounds avoirdupois....Une tonne; 1,000 kilos.

(Coal is sold by the *tonne;* grain and hay by the *quintal.* Dix quintaux de blé, de foin=10 quintals of grain, of hay.)

1.0567 quart (liquid).....Un litre.
26.417 gallons.....Un hectolitre.
0.9081 quart (dry).....Un litre.
2.8379 bushels.....Un hectolitre.

(The *litre,* which is the principal unit of both fluid and dry measures, is the contents of 1 cubic *décimètre* (décimètre=$\frac{1}{10}$ mètre).)

### DAYS, MONTHS, AND SEASONS.

Sunday.....Dimanche.
Monday.....Lundi.
Tuesday.....Mardi.
Wednesday.....Mercredi.
Thursday.....Jeudi.
Friday.....Vendredi.
Saturday.....Samedi.
January.....Janvier.
February.....Février.
March.....Mars.
April.....Avril.
May.....Mai.
June.....Juin.
July.....Juillet.
August.....Août (pronounce *oo*).
September.....Septembre.
October.....Octobre.

| | |
|---|---|
| November | Novembre. |
| December | Décembre. |
| The seasons | Les saisons. |
| Winter | L'hiver. |
| Spring | Le printemps. |
| Summer | L'été. |
| Fall | L'automne. |
| Year | Un an; une année. |
| Month | Un mois. |
| Week | Une semaine. |
| Day | Un jour. |
| Hour | Une heure. |
| Minute | Une minute. |
| Second | Une seconde. |

COMMON PHRASES.

| | |
|---|---|
| Good morning, sir, madam, miss. Good afternoon | Bonjour, monsieur, madame, mademoiselle. |
| Good evening, sir | Bonsoir, monsieur. |
| Good night, sir | Bonne nuit, monsieur. |
| Pardon me | Pardon; je vous demande pardon. |
| Don't mention it | Je vous en prie. |
| How do you do? | Comment allez-vous?<br>Comment ça va?<br>Comment vous portez-vous? |
| Very well, thank you | Très bien, merci.<br>Je vais bien, merci.<br>Ça va bien, merci.<br>Je me porte bien, merci. |
| Do not trouble yourself | Ne vous gênez pas.<br>Ne vous dérangez pas. |
| I am very glad to see you | Je suis bien aise de vous voir.<br>Je suis content (heureux) de vous voir. |
| What time is it? | Quelle heure est-il? |
| It is 10 o'clock | Il est dix heures. |
| Take care; look out | Prenez garde. |
| Do not bother me | Ne me dérangez pas. |
| Stop here | Arrêtez-vous ici. |
| Does Mr. — live here? | M. — demeure-t-il ici? |

| | |
|---|---|
| Come in | Entrez. |
| You are very kind | Vous êtes très aimable. |
| At what time does the first train start? | A quelle heure part le premier train? |
| What is the name of this station? | Comment s'appelle cette station (gare)? |
| I want | Je désire. Je veux (stronger). |
| I do not want it | Je n'en veux pas. |
| Let me know what I owe you | Dites-moi ce que je vous dois. |
| Are you not mistaken? | Ne faites-vous pas erreur?<br>Ne vous trompez-vous pas? |
| Please give me | Veuillez me donner. |
| Move on | Avancez.<br>Circulez. (Policeman.) |
| I want something to eat | Je désire quelque chose à manger. |
| Where is it? | Où est-ce? |
| Go and look for it | Allez le chercher. |
| Take this letter to the post office. | Portez cette lettre à la poste. |
| How much is it? | Combien?<br>Combien cela coûte-t-il? |
| It is dear | C'est cher. |
| Thank you | Merci.<br>Je vous en remercie. |
| Don't mention it | Il n'y a pas de quoi.<br>De rien. |
| Allow me to present my friend— | Permettez-moi de vous présénter mon ami —. |
| I am glad to make your acquaintance. | Je suis enchanté de faire votre connaissance. |
| How far is it? | A quelle distance est-ce? |
| What can I do for you? | Que puis-je faire pour vous? |
| Do you speak English? | Parlez-vous anglais? |
| I do not speak French very well | Je ne parle pas très bien le français. |
| Where do you come from? | D'où venez-vous? |
| How did you come? | Comment êtes-vous venu? |
| On foot, in a carriage, in an auto, by rail, by boat, on a bicycle, on horseback, in an aeroplane. | A pied, en voiture, en auto, en chemin de fer, en bateau, à bicyclette, à cheval, en aéroplane. |

MILITARY TITLES, RANKS, AND GRADES.

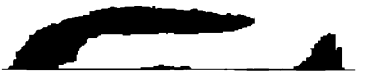
| | |
|---|---|
| General officers | Les officers généraux. |
| General staff | L'état-major général. |
| Field officers | Les officiers supérieurs. |
| Company officers | Les officiers subalternes. |
| Enlisted men | Les hommes de troupe. |
| Noncommissioned officers | Les sous-officiers. |
| Private soldiers | Les simples soldats. |
| Colonel | Le colonel (addressed* as "Mo colonel"). |
| Major | Le commandant ("Mon commandant"). |
| Captain | Le capitaine ("Mon capitaine"). |
| | Le piston (slang). |
| First lieutenant | Le lieutenant (en premier) ("Mon lieutenant"). |
| Second lieutenant | Le sous-lieutenant ("Mon lieutenant"). |
| A doctor | Un (médecin) major. |
| A sergeant | Un sergent (addressed as "Sergent"). |
| | Un maréchal des logis (mounted service). |
| A corporal | Un caporal ("Caporal"). |
| | Un brigadier (mounted service). |
| A private | Un simple soldat. |
| A body of troops | Une troupe. |
| French troops | Des troupes françaises. |
| A wagoner | Un conducteur. |
| | Un fourgonnier. |
| A horseshoer | Un maréchal-ferrant. |
| A saddler | Un sellier. |
| A signaler | Un signaleur. |
| A deserter | Un déserteur. |
| A soldier of Infantry | Un fantassin. |
| Cavalry | Un cavalier. |
| Artillery | Un artilleur. |

* See note p. 276.

| | |
|---|---|
| A soldier of Engineers | Un sapeur-mineur. |
| Quartermaster Corps | Un homme de l'intendance. |
| Signal Corps | Un homme du corps des signaux. |
| Hospital Corps | Un infirmier. |
| Line of Communications | Un garde des voies et communications, G. V. C. |
| Infantry | L'infanterie. |
| Cavalry | La cavalerie. |
| Artillery | L'artillerie. |
| Engineers | Le génie. |
| Signal Corps | Le corps des signaux. |
| Hospital Corps | Le corps de santé. |
| | Le service de santé. |
| Aviation Corps | Le corps d'aviation. |

MILITARY TERMS.

| | |
|---|---|
| The headquarters | Le quartier général. |
| The train | Le train des équipages. |
| Railway service | Le service des chemins de fer. |
| Telegraph service | Le service des télégraphes. |
| Rural guards | La gendarmerie. |
| | Des gendarmes. |
| A paymaster | Un trésorier. |
| A chaplain | Un aumônier. |
| An army | Une armée. |
| General So-and-so's army | L'armée—(l'armée Foch). |
| An army corps | Un corps d'armée. |
| A division | Une division. |
| A brigade | Une brigade. |
| A regiment | Un régiment. |
| A battalion | Un bataillon. |
| A company | Une compagnie. |
| A platoon | Un peloton. |
| A section | Une section. |
| A squad | Une escouade. |
| A detachment | Un détachement. |
| Barracks | Une caserne. |
| A camp | Un camp (more or less permanent). |
| | Un campement (temporary). |



| | |
|---|---|
| A cantonment | Un cantonnement. |
| Line | (Une) ligne. |
| Column | (Une) colonne. |
| As skirmishers | En tirailleurs. |
| Follow me, as skirmishers | A moi, en tirailleurs. |
| Scouts | Des éclaireurs. |
| A patrol | Une patrouille. |
| The advance guard | L'avant-garde. |
| The rear guard | L'arrière-garde. |
| Flankers | Des flanc-gardes. |
| The main body | Le gros (de la colonne). |
| Combat train | Le train de combat. |
| Field train | Le train régimentaire. |
| Outposts | Des avant-postes. |
| Cossack posts | Des avant-postes à la cosaque. |
| A sentinel | Une sentinelle. |
| | Un factionnaire. |
| On post | En faction. |
| | De faction. |
| Guard mounting | La garde montante (also *new guard*). |
| The sentinel challenges: "Halt! Who's there?" | La sentinelle crie: "Halte! Qui vive" |
| The answer is: "France" | La réponse est: "France." |
| Advance with the countersign | Avance au ralliement. |

(The person challenged gives the *mot d'ordre*, which is the name of some general, and the sentinel replies with the *mot de ralliement*, which is the name of a battle or a city.)

| | |
|---|---|
| Go away; you can't pass | (Passe) au large. |
| Halt, or I fire | Halte, ou je fais feu. |
| Put down your arms | Déposez vos armes. |
| Hands up | Levez les bras. |
| Face about | (Faites) demi-tour. |
| Come here | Venez ici. |
| A spy | Un espion. |
| A flag of truce | Un drapeau blanc. |
| | Un drapeau parlementaire. |

UNIFORM, ARMS, CLOTHING, AND EQUIPMENT.

| | |
|---|---|
| Clothing | Les vêtements, l'habillement. |
| Change your clothes | Changez de vêtements. |
| Overcoat (worn by French infantry) | Une capote. |
| Trousers | Un pantalon. |
| Breeches | Une culotte. |
| Shirt | Une chemise. |
| Blouse | Un dolman, une vareuse. |
| Cap | Un képi. |
| Campaign hat (United States) | Un (chapeau de) feutre. |
| Helmet | Un casque (de tranchée). |
| Cap without visor worn by French off duty | Un bonnet de police. |
| Tam-o'shanter worn by Alpine chasseurs | Un béret. |
| Shoes in general | Des chaussures. |
| Service shoes | Des brodequins. |
| Leggins | Des guêtres. |
| Wrap putties | Des bandes molletières. |
| Leather putties | Des houseaux (or housseaux). |
| Full-dress uniform | La grande tenue. |
| Dress uniform | La petite tenue. |
| Field uniform | La tenue de campagne. |
| Overcoat (mounted men) | Un manteau. |
| Overcoat (officers) | Un manteau.<br>Un manteau-capote. |
| Fatigue coat | Le bourgeron. |
| Fatigue trousers (overalls) | Un pantalon de treillis. |
| Fatigue uniform | La tenue de corvée. |
| Magazine rifle | Un fusil à répétition. |
| The barrel | Le canon. |
| The bolt | Le verrou. |
| The ramrod | La baguette. |
| The butt | La crosse. |
| The gun sling | La bretelle. |
| The trigger | La détente. |
| Rear sight | La hausse. |
| Front sight | Le guidon. |

| | |
|---|---|
| A bayonet | Une baïonnette. Rosalie (slang). |
| Ball cartridge | Une cartouche à balle. |
| Blank cartridge | Une cartouche à blanc. |
| Dummy cartridge | Une fausse cartouche. |
| Belt | Un ceinturon. |
| Cartridge box | Une cartouchière. |
| First-aid packet | Un paquet de pansement. |
| The pack | Le sac. |
| A haversack | Un étui-musette. |
| Canteen | Un bidon. |
| Tin cup | Un quart. |
| Mess can | Une gamelle. |
| Equipment | L'équipement. |
| Compass | Une boussole. |
| Field glasses | Des jumelles (de campagne). |
| Whistle | Un sifflet. |
| Revolver | Un revolver. |

QUESTIONS ABOUT THE ROADS, ETC.

| | |
|---|---|
| Pardon me, sir, do you speak English? | Pardon, monsieur, parlez-vous anglais? |
| (German, French, Italian, Russian) | (Allemand, français, italien, russe.) |
| All right, then show me, please, the road to——. | Très bien, alors indiquez-moi, je vous prie, le chemin de ———. |
| Is it far from here? | Est-ce loin d'ici? |
| How long does it take to go there? | Combien faut-il de temps pour y aller? |
| How many kilometres? | Combien de kilomètres? |
| Is there a short cut? (road) | Y a-t-il un chemin de traverse? |
| Is there a short cut? (trail) | Y a-t-il un sentier plus court? |
| Where does this road go? | Où mène cette route? |
| Are we on the right road to go to ——? | Sommes-nous sur le bon chemin pour aller à ——? |
| Does this road go through Compiegne? | Cette route passe-t-elle par Compiègne? |
| Shall we find any villages on our road? | Trouverons-nous des villages sur notre chemin? |

| | |
|---|---|
| Are there any other roads going to ——? | Y a-t-il d'autres chemins pour aller à ——? |
| Is this road in good condition? | Cette route est-elle en bon état? |
| Are there hills? | Y a-t-il des côtes (des coteaux)? |
| Are they steep? | Sont-elles raides? |
| Does the road go through open or wooded country? | La route traverse-t-elle un pays découvert ou boisé? |
| Can we get through with artillery? | Peut-on passer avec de l'artillerie? |
| Can we get through with heavily loaded wagons (auto trucks)? | Peut-on passer avec de grosses voitures chargées (avec des camions-automobiles)? |
| Is this road practicable for artillery? | Cette route est-elle praticable pour l'artillerie? |
| Can infantry march on the sides of the roads? | L'infanterie peut-elle marcher sur les côtes de la route? |
| Is the ground practicable? | Le terrain est-il praticable? |
| Is the ground marshy? | Le terrain est-il marécageux? |
| What is the nature of the ground? | Quelle est la nature du sol? |
| Does the telegraph line follow this road as far as X? | Est-ce que la ligne télégraphique (le télégraphe) suit cette route jusqu'à X? |
| Where does your railroad come from? | D'où vient votre chemin de fer? |
| Where does it go to? | Où va-t-il? |
| Is it single tracked or double tracked the whole way? | Est-il à une voie ou à deux voies sur tout le parcours? |
| Where is the station? Is it far? | Où est la gare? Est-elle loin d'ici? |
| How can the river be crossed? | Comment peut-on passer la rivière? |
| Is there a bridge? a ferry? | Y a-t-il un pont? un bac? |
| Are there fords? | Y a-t-il des passages à gué (des gués)? |
| Can we get boats? | Peut-on trouver des bateaux? |
| In that wood are there clearings, ravines, brooks, marshes, pools? | Dans ce bois, y a-t-il des clairières, des ravins, des ruisseaux, des mares? |
| Are there any places near here for watering horses? | Y a-t-il des endroits près d'ici pour abreuver les chevaux? |
| Is the water good? | Cette eau est-elle bonne? |
| Is this water drinkable? | Cette eau est-elle potable? |

It is late (15 minutes late).....Il est en retard (de quinze minutes).
Do we have to change cars?....Faut-il changer de train?
The train stops.....Le train s'arrête.
All aboard!.....En voiture!
The train starts.....Le train s'ébranle.

RATIONS AND FOOD.

Provisions (in general).....Les vivres.
The ration.....La ration.
Fresh beef.....De la viande fraîche.
Bacon.....Du lard.
Flour.....De la farine.
Soft bread.....Du pain frais.
Hard bread (crackers).....Du biscuit.
Field bread.....Du pain de guerre.
Corn meal.....De la farine de maïs.
Coffee.....Du café.
Sugar.....Du sucre.
Eggs.....Des œufs.
Chickens.....Des poulets.
Potatoes.....Des pommes de terre.
Peas.....Des pois.
String beans.....Des haricots verts.
Vegetables (in general).....Des légumes.
An apple.....Une pomme.
A pear.....Une poire.
A cherry.....Une cerise.
A peach.....Une pêche.
Cheese.....Du fromage.
Wine.....Du vin.
Beer.....De la bière.
A glass of beer.....Un bock.
I am hungry.....J'ai faim.
Bring me something to eat, please.Apportez-moi quelque chose à manger s'il vous plaît.
I am thirsty.....J'ai soif.
Please give me a glass of water..Veuillez me donner un verre d'eau.
Waiter, I'll take a beefsteak....Garçon, je désire un bifteck.

| | |
|---|---|
| Some black coffee | Du café noir. |
| Coffee with milk | Du café au lait. |
| Rolls | Des petits pains. |
| Crescent rolls | Des croissants. |

### HOSPITALS.

| | |
|---|---|
| A field hospital | Une ambulance. |
| A hospital (in general) | Un hôpital (plural: des **hôpitaux**). |
| A dressing station | Un poste de secours. |
| A first-aid dressing | Un pansement sommaire. |
| Red Cross | La Croix Rouge. |
| A doctor | Un médecin. |
| | Un docteur. |
| A surgeon | Un chirurgien. |
| A military surgeon | Un (médicin) major. |
| Assistant surgeon | Un aide-major. |
| A male nurse, hospital corps man | Un infirmier. |
| A female nurse | Une infirmière. |
| An ambulance | Une ambulance. |
| A stretcher (litter) | Un brancard. |
| A litter bearer | Un brancardier. |
| A roll of bandages | Un rouleau de bandage. |
| A first-aid packet | Un paquet de pansement. |
| A wounded man | Un blessé. |
| I am sick | Je suis malade. |
| I have a fever | J'ai la fièvre. |
| I have chills and fever | J'ai des frissons de fièvre. |
| I am constipated | Je suis constipé. |
| I have diarrhea | J'ai la diarrhée. |

### POINTS OF THE COMPASS.

| | |
|---|---|
| North | Le nord. |
| South | Le sud. |
| East | L'est. |
| West | L'ouest. |
| Northeast | Le nord-est. |
| Southeast | Le sud-est. |
| Northwest | Le nord-ouest. |
| Southwest | Le sud-ouest. |

TRENCH WARFARE.

| | |
|---|---|
| Trench warfare | La guerre des tranchées. |
| | La guerre de position. |
| | La guerre de taupe (*moles*). |
| Trench | Une tranchée. |
| Communication trench | Un boyau (de communication). |
| The parapet | Le parapet. |
| A loophole | Un créneau. |
| | Une meurtrière. |
| A grenade | Une grenade. |
| A grenadier, bomber | Un grenadier. |
| Barbed wire | Du fil de fer barbelé. |
| Barbed wire entanglement | Un réseau de fils de fer barbelés. |
| Trench mortar | Un mortier. |
| | Un crapouillaud. |
| | *Minenwerfer* (German). |
| Bomb | Une bombe. |
| Howitzer | Un obusier. |
| Machine gun | Une mitrailleuse. |
| Fieldpiece | Une pièce de campagne. |
| 75 millimeter field gun | Une pièce de soixante-quinze. |
| Siege gun | Une pièce de siège. |
| 120 long | Cent vingt long. |
| 120 short | Cent vingt court. |
| 77 (German) | Soixante-dix-sept (allemand). |
| Shell | Un obus. |
| | Une marmite (slang). |
| | Un colis à domicile (slang). |
| Shrapnel | Un shrapnell. |
| | Un rageur (slang). |
| Periscope | Un périscope. |
| Trench knife | Un couteau de tranchée. |
| Dugout | Un abri dans les tranchées. |
| | Un cagibi (slang). |
| | Une cagna (slang). |
| | Un gourbi (slang). |
| | Une guitoune (slang). |

NOTE.—In addressing an officer of grade superior to his own, an officer must use the possessive adjective; a senior addressing a junior uses the title of the grade only. Thus: A major to a colonel says "Mon colonel," but the colonel to the major "Commandant."

## APPENDIX.

# FORM FOR LAST WILL AND TESTAMENT.

**Last Will and Testament**

**OF**

---

*I,* _____

*of* _____

*do make, publish, and declare this my last will and testament.*

*I give, devise, and bequeath to*[1] _____

_____

_____

_____

_____

_____

*And I do give, devise, and bequeath all the rest and residue of my estate, both real and personal, to* _____

_____

_____

*heirs and assigns forever,*[2] _____

_____

_____

[1] Here insert specific legacies and devises.

[2] If the residue of the estate is given to several persons, add here the manner in which it is to be divided, as "in equal shares as tenants in common."

*I hereby appoint*_____

_____

_____*executor*

*of this my last will and testament, and I desire that*_____ *shall not be required to give bond for the performance of the duties of that office.*

*Witness my hand this*[3]_____

*day of*_____, *191*

_____

*Signed, published, and declared by*_____

_____

*the above-named testator, as and for his last will and testament, in the presence of us, who, at his request and in his presence, and in the presence of each other, have subscribed our names as witnesses thereto.*[4]

_____

Residence: _____

_____

Residence: _____

_____

Residence: _____

[3] If the will is made in Nevada, or if the testator has real estate in that State, he should affix his seal.

[4] If the will is made in Louisiana, unless it is wholly in the handwriting of the testator, there should be seven witnesses and a notary at the "sealing up." If wholly in his handwriting no formalities are required.

NOV 30 1917